

NEW GENERATION OF EDUCATORS INITIATIVE

Transforming Educator Preparation

APRIL 2020

Mimi Miller, Editor

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EXECUTIVE SUMMARY

Mimi Miller, California State University, Chico

The focus of the New Generation of Educators Initiative (NGEI) was to answer the question “What would it take to transform teacher education?” From 2016 to 2019, with support from the S. D. Bechtel, Jr. Foundation, teacher education programs at 10 California State University (CSU) campuses partnered with local school districts to design and demonstrate innovative practices that could transform teacher preparation. This report documents the learnings from multiple participants in this transformative work, including Foundation program staff and representatives from partnerships between universities and school districts.

GRANT GOALS AND STRATEGIES

The overarching aim of the initiative was threefold: 1) to demonstrate improved practices that prepare new teachers for success on their first day in the classroom, with a particular focus on K–8 STEM instruction (science, technology, engineering and math) that is aligned with Common Core Math Standards and Next Generation Science Standards; 2) to scale and sustain these improvements across the CSU system; and 3) to inform and influence the approaches used by other teacher preparation program providers, as well as funders and policymakers supporting their efforts. The grant’s main strategies, developed collaboratively with key administrators and faculty from the California State University system, included developing a set of principles to guide the transformative work (“Key Transformation Elements”), funding key positions at districts and universities to lead and support the efforts, providing robust technical assistance and creating a learning community among grant recipients. Funding also was used to support the CSU’s Educator Quality Center, a central resource in CSU systemwide efforts to build a culture of data use and improvement in teacher preparation.

Participating campuses (Bakersfield, Cal Poly San Luis Obispo, Channel Islands, Chico, Fresno, Fullerton, Long Beach, Monterey Bay, Sacramento and Stanislaus) each received funding of between \$200,000 and \$400,000 annually for three years, with indirect costs capped at 8%. Campuses were required to share grant funds with at least one school district partner, with no partner retaining more than 60% of the funds.

THE FOUNDATION’S PERSPECTIVE

In the report, program staff from the S. D. Bechtel, Jr. Foundation (the Foundation) offer insights with the hope that their learnings will benefit other funders who wish to support clinically-oriented teacher preparation partnerships between universities and public school districts.

Supportive Grant Structures. Foundation program staff found that some components of the grant structure led to particularly promising outcomes. First, partnerships were required to select and use a rubric to assess candidate instructional skills and behaviors and provide them with feedback. While the new rubric was challenging to implement, partnerships reported that the rubric was a vital component of their improvement efforts. Second, the grant required that funds support half-time coordinators on campus and at each school district. These positions proved effective in leading and supporting collaboration across institutions. Third, the grant required that each project appoint a Continuous Improvement Lead to facilitate changes in assessment practice, a role that proved helpful for providing time for the analysis, collection and use of data. Fourth, the grant supported opportunities for peer learning through convenings, which were valuable opportunities for partnerships to learn together and exchange ideas. A fifth successful component was providing opt-in technical assistance, which allowed for deeper support based on the needs of the grantees.

Lessons Learned. Through this experience with NGEI, Foundation program staff learned that it was essential to provide a continuity of funding over multiple years because transformation in large institutions takes time. Also essential was ensuring that funding supported release or reassigned time for faculty and staff to dedicate time toward initiative efforts. Further, they found it important to be able to add financial resources in response to innovative ideas that arose during the grant, such as offering mini-grants to other CSUs who were inspired by the NGEI work.

If They Could Start Over. If beginning today, the Foundation would more explicitly focus on supporting programs to recruit and prepare candidates reflective of the rich diversity of California. In addition, the request for proposals would include a requirement for active involvement by the dean of the school or college of education to help facilitate alignment and progress among partner teams. Based on the Foundation's experience from the NGEI, the grant would focus more explicitly on the residency model (in which candidates are mentored by a carefully selected teacher over a full academic year) because of its promise as an approach to affect systemic change in teacher preparation. Foundation staff would also ensure that mentor teachers were compensated for the significant time spent with their candidates and that candidates (or teacher residents) received financial support so that they could benefit from a full year of co-teaching and coaching without adding to their student loan debt.

Other Considerations for Future Funders. The Foundation's experience in implementing the NGEI yielded additional lessons that may benefit other funders who wish to invest in teacher education. First, Foundation program staff learned the importance of carefully considering the context for initiative implementation, in this case the structure of institutions (higher education and K–12) and regional needs (urban vs. rural). Second, funders may want to adopt a grant model that includes both required and “opt-in” supports. The Foundation's investments in technical assistance and learning opportunities were put to good use by partnerships. Third, future funders may want to consider emphasizing the use of data to fuel improved performance, as this emphasis in the NGEI efforts led to significant changes in the data practices of district and campus teams. And fourth, funders may want to consider focusing their resources on the residency model as a path toward building school districts' capacities to improve, scale and sustain excellent practice.

THE PARTNERSHIPS' PERSPECTIVES

In the report, each of the 10 partnerships was asked to reflect on one of the five NGEI grant principles, or Key Transformation Elements (KTEs), that guided their work: building university and school district partnerships, identifying prioritized skills for educators, designing practice-based teacher preparation, providing feedback on prioritized skills and using data for continuous improvement. In their reflections, partnerships described how they set goals and advanced toward the KTEs, how they managed setbacks and measured change, and how they worked to scale and sustain innovations. Highlights from these reflections are summarized here; the full report includes detailed descriptions of program transformations and links to supplemental documents that further illustrate program innovations.

Building University and School District Partnerships. Campuses and districts focused on forming deep partnerships that began with a shared vision of effective K–12 instruction and took shape through a cohesive learning experience for candidates that spanned pre-service through induction.

For example, with assistance from the National Center for Teacher Residencies (NCTR), CSU Stanislaus and its partners from Turlock Unified School District and Ceres Unified School District launched Warriors Teach!, a year-long residency program. Seeing the need for continued professional development for mentor teachers, they involved district induction coordinators in providing this support and created a seamless, lasting connection between pre-service preparation and in-service teacher induction. After NGEI, they have secured grant funding to continue the residency, and the partner districts will be using Local Control and Accountability Plan (LCAP) funding to continue support for district induction coordinators to work with credential programs.

CSU Long Beach and Long Beach Unified School District (LBUSD) revamped their model for clinical placements of credential candidates with mentor teachers. Before NGEI, due to the large number of candidates needing clinical placements, candidates were asked to find their own placements for two of three required clinical experiences. NGEI funding helped the partnership transform this process; before candidates complete any portion of fieldwork in LBUSD, now they must complete an application and fingerprint clearance with the district, and they are assigned to classrooms based upon the specific pedagogy courses they are taking. LBUSD will continue to provide fingerprint clearance free-of-charge to credential candidates. Central to this partnership's success in its NGEI work was the loan of two program specialists from LBUSD to engage with the campus in the NGEI reform efforts. The district has committed funding so that district personnel can continue to work as liaisons with the university.

These teams learned that initiating and sustaining a successful partnership requires a true co-ownership of the work, including having joint goals from the outset. Making the time and space to communicate frequently and share decision-making led to powerful collaboration.

Identifying Prioritized Skills for Educators. Together, campuses and districts identified “prioritized skills”—the abilities that are most vital to teacher preparation based on the needs of local students and instruction aligned with math and science standards. Partnerships designed their transformations around their prioritized skills.

CSU Monterey Bay and Monterey Peninsula Unified School District partnered to create a rubric that aligned with their prioritized skills, which focused on teaching in science, technology, engineering and math (STEM). They supplemented their rubric with the development of a list of STEM-specific micro-moves, the fundamental teaching behaviors for instruction in STEM content areas. For example, one prioritized skill was “multiple opportunities for the students to reflect, self-assess and/or reframe their thinking.” The corresponding micro-move was “the candidate models the metacognitive process or a think-aloud.” Candidates, faculty, university supervisors (also referred to as clinical coaches), cooperating teachers and administrators all learned about the prioritized skills through coursework and/or professional development opportunities. Three school sites worked closely with university faculty to become STEM-focused schools where pre-service teachers could practice STEM instruction. This partnership’s NGEI efforts resulted in integrated district systems for STEM instruction and training that will continue beyond the grant.

CSU Chico and its partners from Chico Unified School District chose prioritized skills to support new and veteran teachers in implementing the Next Generation Science Standards (NGSS). They created the “Triad Project,” in which teams of three educators—a teaching credential candidate, the candidate’s mentor teacher and a university science professor—were supported as they created and taught NGSS-aligned units. Their observational rubric supported prioritized skills that aligned with NGSS, including student engagement, essential content, academic ownership and demonstration of learning. They focused specifically on the prioritized skill of “making student thinking visible” which happens when teachers ask productive questions, have students draw models of phenomena or write evidence-based arguments. The 62 K–8 units created and taught from 2016 to 2019 demonstrated NGSS-aligned practices, and student work produced from this instruction showed evidence of students engaging deeply with science and engineering. The Triad Project transformed instruction in the Multiple Subject Program and the rubric was adopted by all credential programs, ensuring that the NGEI efforts would be sustained.

Partnerships found that adopting a set of prioritized skills gave them targets for their improvement efforts and helped them focus on teaching practices that deepened student learning.

Designing Practice-based Teacher Preparation. Also central to the NGEI efforts was preparing teacher candidates in the classroom, where they would be ensured opportunities to practice prioritized skills while supported by well-prepared mentor teachers.

For example, CSU Channel Islands partnered with Pleasant Valley School District to align coursework and clinical experiences, emphasizing science and math instruction. In their science methods courses, candidates were charged with designing a NGSS-based 5E learning sequence (engage, explore, explain, elaborate and evaluate). During professional development workshops, teacher candidates and their mentors planned the learning sequence together before implementing it in their classrooms. To align coursework with clinical practice in math, faculty provided opportunities for teacher candidates to observe lessons facilitated by the math methods course instructor in third and fifth grade classrooms. In addition, teacher candidates in residency placements hosted their colleagues for math “lab day,” an all-day learning experience with elementary students. The partnership developed STEMposium workshops to support teachers throughout the region in implementing STEM instruction and to ensure that current and potential mentor teachers would be well-prepared to support teacher candidates. With the support of school district funding, these professional development efforts will continue after the grant.

A focus of CSU Sacramento’s partnership with Sacramento City Unified School District was to map prioritized skills onto the clinical experience and coursework. For their prioritized skills, they adapted a set of high leverage practices (HLPs) from TeachingWorks, and they coordinated coursework and clinical practice to move candidates through stages of the learning cycle (introduce, prepare, enact, analyze). In this cycle, candidates are introduced to a prioritized skill, prepare with peer run-throughs and rehearsals, enact the practice in the classroom and analyze their teaching using videos. The partnership found that explicitness of prioritized skills created a common language for candidates, mentors, coursework instructors and university supervisors. Frequent consideration of data from observational rubrics helped

discussions shift from intuitive notions about teaching toward ones that focused on specific teaching skills. These practices have been integrated into their teacher preparation programs and will be sustained beyond the NGEI funding.

From engaging in these reforms, partnerships learned that making progress in practice-based clinical preparation requires internal coherence among program elements, ongoing communication across all stakeholders and an ability to stay focused.

Providing Feedback on Prioritized Skills. Another aim of the NGEI was to ensure that feedback for teacher candidates was data-driven, specific and actionable, featuring ongoing and coordinated inputs from CSU faculty, supervisors and teacher mentors.

For example, one of the goals of CSU Bakersfield and their partners at Bakersfield City Unified School District was for resident teachers in the Kern Urban Teacher Residency (KUTR) to have consistent, quality feedback from observers, including mentor teachers, university supervisors and district coaches. Early in the grant, they examined the contents of observation forms and found that feedback that was often inconsistent, unfocused, biased and not rooted in factual evidence. As a response, the partnership provided additional training in which observers were guided through an analysis of the prioritized skills and observational rubric components. Observers were also provided with a crosswalk document that listed the indicators, or what to “listen for” and “look for” when observing a skill or component. By the project’s third year, all residents received quality feedback at least twice per month from their various support entities. Completed observation forms showed a change from mostly generic qualitative statements and loosely-supported quantitative scores to more detailed, fact-based observational evidence. These practices have been accepted widely and will continue in the future.

CSU Fullerton and its three district partners (Anaheim Union High School District, Orange Unified School District and Placentia-Yorba Linda Unified School District) ensured evidence-based feedback by focusing on the training of clinical coaches. After training clinical coaches on a newly adopted rubric to use when observing teaching candidates, the NGEI team found that clinical coaches were confused about some of the rubric items and that written observations needed more sufficient evidence statements. This finding prompted them to provide professional development about observation practices and the content that candidates were learning in their methods courses. Clinical coaches were provided with other resources such as support guides to use during observations and discussions with candidates, videos of exemplar post-observation conferences and dedicated online resource sites. As a result of these efforts, clinical coaches reported feeling well-prepared for their roles and candidates agreed, reporting that their clinical coaches were influential in their development. The feedback practices have been integrated into regular functioning of credential programs, and the lasting resources built with the NGEI funding will continue to support clinical coaches into the future.

Partnerships noted that quality feedback played an important part in candidates’ learning. In addition, having a process that produced quality, evidence-based feedback allowed the teams to use these data to inform continuous program improvement.

Data-Driven Continuous Improvement. The fifth Key Transformation Element involved using data to measure candidates’ progress toward proficiency and gaps in prioritized skills. As part of this KTE, partnerships employed the principles and methods of improvement science to continuously elevate the quality of their educator preparation programs. Project teams engaged in a series of “learning sprints,” characterized by short cycles of data collection and analysis to study aspects of systems of teacher preparation.

During Learning Sprints 1 to 5, for example, Cal Poly San Luis Obispo and their partners at Lucia Mar School District focused on analyzing and improving supervisor written feedback. In Learning Sprints 1 and 2, they studied variations in feedback and found three primary influencers: a) teacher candidate teaching context and individualized needs, b) supervisor beliefs about teaching and c) supervisor content knowledge and confidence level. These findings helped them design professional development, which they implemented and studied in learning sprints 3 to 5. For Learning Sprints 6 to 8, the partnership joined a Continuous Improvement Fellowship through WestEd and created a New Teacher Learning Community (NTLC) to support new teachers in Lucia Mar School District. Throughout this process they engaged in improvement science, grounded in both process and outcome measures, to inform iterative changes to components of the New Teacher Learning Community. The workshops

to support feedback practices will continue with support of funding by a Teacher Quality Program (TQP) grant, and the NTLC will be supported by district funding. Continuous improvement practices have permeated the culture of credential programs and will continue to be a part of the daily work of teacher preparation.

CSU Fresno and their partners from three school districts (Fresno Unified School District, Sanger Unified School District and Central Unified School District) established routines for using data to identify meaningful programmatic changes. Their engagement in learning sprints and continuous improvement processes led to the regular use of data on candidate performance and program effectiveness, which are now collected regularly, shared at program meetings and used as a launching point for substantive discussions about programs. Using an improvement research framework allowed them to see the system from a broader range of student perspectives via inquiry cycles that were systematically designed and implemented across all credential pathways. Data literacy and inquiry permeated the work of teacher preparation at all levels, and data literacy became a component in their credential courses. Recognizing that the credential programs needed a comprehensive data management system to collect, store and retrieve data, CSU Fresno implemented Tk20 and the campus will continue to support the use of this system in the future.

While engaging in continuous improvement work, partnerships learned the importance of frequent and iterative data collection and the necessity of infrastructure to support data collection and use.

LOOKING FORWARD

NGEI featured five Key Transformation Elements shaped and demonstrated across multiple years through partnerships anchored in 10 CSU campuses. These KTEs are being scaled and sustained on each of the reform campuses. Their adoption and dissemination impacted practices across the CSU.

- Because of the successful **partnerships** between campuses and school districts that were formed through the NGEI work, the nature of teacher preparation within the CSU has been dramatically changed, with new commitments to teacher preparation as a joint enterprise between school districts and campuses. To sustain many of the changes, districts are funding elements of teacher preparation, realizing the benefit to their schools and communities.
- A focus on **prioritized skills** will continue to shape preparation of candidates within the CSU system. There is significant CSU interest in additional learning of high-leverage teaching practices and continuing the CSUs' relationship with TeachingWorks at the University of Michigan.
- The focus on **clinical practice** as central to teacher preparation will remain a priority of the CSUs. A commitment to residency programs, which place clinical practice at the center of teacher preparation, exists on virtually all of the campuses that received the multiple-year grants. In further support of this model, the California Commission on Teacher Credentialing has established funding to support residency programs across the state.
- The process and practices developed to improve the **quality of feedback** to candidates will continue to play an important role in teacher preparation. The use of observation instruments, rubrics and protocols, as well as the training to support their use, have become a routine practice across programs in the NGEI campuses.
- Because partnerships found their **continuous improvement** work to be highly valuable, more application of this data-based improvement model is anticipated in the future, with facilitation by the CSU Educator Quality (EdQ) Center. A culture of data-driven excellence was established and is now a campus norm across the California State University system.

The NGEI partnerships succeeded in demonstrating improved practices that prepare new teachers for success on their first day in the classroom. Their efforts have had lasting effects, with sustained impact on CSU campuses and public school districts, and lessons learned will inform providers of teacher preparation programs and guide the funders and policymakers who support their efforts. The result will be continuation and further impact of the NGEI's teacher education reforms into the future.

PREFACE

Marquita Grenot-Scheyer, Assistant Vice Chancellor for Educator Preparation and Public School Programs, The California State University

It is my great pleasure to introduce the work of the New Generation of Educators initiative, or NGEI. As Assistant Vice Chancellor for Educator Preparation and Public School Programs in the California State University (CSU), I have the honor of working alongside education deans, directors and faculty to develop and deliver high-quality preparation programs to ensure that we graduate well-prepared and diverse teachers, counselors and leaders for schools and communities.

The California State University (CSU) is the largest four-year public institution in the nation. Across our 23 campuses, we educate nearly 481,000 students annually and these students are the most ethnically, economically and academically diverse student body in the nation. We have nearly four million alumni, and I am proud to be counted among them.

The CSU prepares nearly 50% of all teachers in California, and approximately 10% of the nation's teachers. Preparation programs in our colleges and schools of education are in direct support of Graduation Initiative (GI) 2025, the CSU's signature student success initiative. The goal of GI 2025 is to increase graduation rates for all CSU students while eliminating opportunity and achievement gaps among students. In support of GI 2025, our colleges and schools of education prepare teachers, counselors and leaders to ensure that future CSU students are academically prepared for the rigor of their careers.

As you will read throughout this publication, the primary goal of the NGEI was to demonstrate improved practices that prepare beginning teachers for success on "day one." Further, our work also involved scaling and sustaining these improvements across all preparation programs in the CSU as well as informing policymakers and community partners. Particular attention has been given to the question, "What does a beginning teacher need to know and be able to do in the era of new standards to effectively teach California's students?" A fundamental premise has been that beginning teachers must be skilled in helping all students succeed with the Common Core State Standards and the Next Generation Science Standards. Another basic premise has been that beginning teachers prepared by the CSU need to be champions for equity and inclusion and prepared in districts and schools serving diverse students. These features have permeated the implementation of the NGEI.

The genesis for this work began at a meeting of the education deans and directors nearly a decade ago, when a senior program officer from the S. D. Bechtel, Jr. Foundation met with us to better understand CSU educator preparation programs. He posed a simple yet at the same time a very complex question to the group: "What would it take to truly transform teacher preparation?" At the time, I was a dean, and I distinctly remember our collective answers included many good suggestions, but clearly, we were just "tinkering around the edges." Our colleague listened to us patiently and then challenged us to think big and bold, which we did, and the seeds of the NGEI were born.

In a project of this nature and stature, there are many, many individuals to recognize and thank, but if I were to enumerate them all, this publication would more closely resemble a dissertation than one would read, and that is not our intent.

Let me begin by expressing my heartfelt gratitude to our thought partners from the S. D. Bechtel, Jr. Foundation, Lauren B. Dachs, Susan Harvey, Arron Jiron, Macy Parker (now with the Silver Giving Foundation) and Jana Luft. Working alongside you has been thought provoking, inspiring, authentic, transformative and...a lot of fun! Together we have demonstrated the power of a foundation and higher education partnership. On behalf of all of us in the CSU, I thank you for your dedication and generous support.

There are a number of CSU system colleagues who were instrumental in the development and implementation of the initiative, working closely with campus and external partners. I want to recognize the outstanding contributions of Joan Bissell, Systemwide NGEI Project Director and CSU Director of Educator Preparation and Public School Programs, retired; Ruth Yopp-Edwards, Systemwide NGEI Assistant Project Director and Professor at CSU Fullerton; Mimi Miller, editor of this volume, Professor at CSU Chico and NGEI Triad Project co-director; and the Educator Quality Center team of Paul Tuss, Sarah Kolbe and Ginger Simon.

A number of external partners have provided guidance and technical assistance, which has enhanced the work of our faculty and leaders. Individually and collectively, we have benefited from the wisdom, experience and skills of individuals representing the following organizations:

- National Center for Teacher Residencies (NCTR)
- SRI International and WestEd
- ConsultEd Strategists
- TeachingWorks
- Williams Group

I have long believed that CSU faculty are among the best and brightest in the nation and the faculty who have led this work on their campuses, along with their district partners, have not proved me wrong. I want to acknowledge the outstanding work of all faculty who were part of this initiative.

Let me end my remarks by expressing my gratitude to the deans and directors of education who helped to lead, nudge and support this work on their respective campuses. You are an outstanding group of educational leaders, and your vision and commitment to this work will help to sustain the initiative and all that we have accomplished together into the future.

INTRODUCTION

Mimi Miller, California State University, Chico

In the quest to transform teacher education, the New Generation of Educators Initiative (NGEI) resulted in learnings about teacher education that grant participants wanted to share more broadly. From 2015 to 2019, funding from the S. D. Bechtel, Jr. Foundation enabled innovations that otherwise might not have been possible. This document was created for all stakeholders in teacher education so that they may have a window into the experiences of a group of individuals across California who joined together with a common mission.

Chapter 1, “Background and Genesis: The New Generation of Educators Initiative,” describes the development of the initiative, including its history and the lessons learned from the funder’s perspective. The goal of this chapter is to provide insights for foundations who wish to support future initiatives focused on teacher preparation.

Chapters 2 through 6 contain participants’ reflections around five themes that align with the NGEI Key Transformation Elements (KTEs). In these chapters, each highlighting the work of two CSUs with their district partners, grant participants tell the stories behind innovative programmatic changes. In their own words, these teacher educators share their learnings and how they plan to scale and sustain their innovations.

In Chapter 2, “Building University and School District Partnerships,” authors reflect on their experiences as they built broad and deep partnerships in their local communities and beyond, all focused on preparing effective educators who would have a marked impact on the diverse California student population.

In Chapter 3, “Identifying Prioritized Skills for Educators,” authors describe how their partnership teams decided which of the many teaching skills to emphasize throughout their programs and how they used rubrics to measure progress.

Chapter 4, “Designing Practice-based Teacher Preparation,” gives insight into how the authors’ NGEI teams embedded prioritized skills in coursework and fieldwork, creating an integrated emphasis on teaching practice.

Chapter 5, “Providing Formative Feedback,” focuses on providing structured opportunities for candidates to receive calibrated feedback from university faculty and mentor teachers.

In Chapter 6, “Using Data for Continuous Improvement,” authors describe how they tested the impact of the innovations by examining their current practices, implementing meaningful changes and measuring outcomes.

In each chapter, contributing authors have provided links to supplemental documents that illustrate innovations that were particularly effective. Of the many documents that were created as part of the NGEI efforts, those included as supplements to this document were selected because they are informative and practical. All supplements can be downloaded and adapted for use as resources both inside and outside the California State University system.

The authors who contributed to this document have a common intent—that it will provide insights and practical applications to individuals committed to preparing teachers. With deep gratitude for the opportunity to be part of this work, the NGEI participants want their efforts to contribute to the future of teacher education.

1. BACKGROUND AND GENESIS: THE NEW GENERATION OF EDUCATORS INITIATIVE¹

Macy Parker and Jana Luft, S. D. Bechtel, Jr. Foundation

The CSU New Generation of Educators Initiative (NGEI) stands as the signature investment in improving California Teacher Preparation by the S. D. Bechtel, Jr. Foundation (the Foundation). As the Foundation staff who have been privileged to work most closely with CSU leaders, faculty and partners over the five years of the initiative, we are pleased to provide an overview of the Foundation's interest in CSU teacher preparation, a brief history of the initiative itself and the lessons we learned from a funder perspective. The Foundation, its board and founder and our staff are proud to have supported the efforts of the CSU during this time of transformation and learning, and we offer these reflections in the hopes that, as we approach the Foundation's sunset at the end of 2020, other funders might take up the lessons we have learned and continue to support the growth and improvement of clinically-oriented teacher preparation partnerships between universities and public school districts.

Through the NGEI, the S. D. Bechtel, Jr. Foundation invested more than \$20 million across six years, from 2014 to 2019, to support high-quality, clinically-oriented preparation for new teachers in California. We believe that among the successes of the initiative are:

- Deeper partnerships between CSU campuses and the local public-school districts where candidates practice their craft and begin their careers.
- A clearer shared definition among local partners of the competencies required for beginning teachers and the instruments, practices and ongoing training required to calibrate among the various groups tasked with providing feedback to candidates on their growth in these competencies.
- Improvement in the systems and routines to collect and use data to better support individual candidates and to engage in continuous improvement of preparation programs.
- A growing recognition among California education leaders and policy-makers of the importance of clinically-oriented preparation, as evidenced by the state's recent \$75 million investment in new and expanded teacher residencies and the proposed \$175 million additional investment in 2020.

Why Did We Invest in Teacher Preparation?

Drawing on the professional and personal interests of founder S. D. Bechtel, Jr., the Foundation has a long history of supporting engineering education and has been a champion of science, technology, engineering and math (STEM) instruction in the new century.

As the Foundation moved through its concluding years—the board decided in 2009 to spend down all assets, ultimately setting 2020 as the last year of operations—it committed to significant, multi-year investments to advance high-quality models of teaching and learning in California's K–8 classrooms based on the Common Core State Standards in Mathematics (CCSS-M) and the Next Generation Science Standards (NGSS). These academic standards emphasize critical thinking and require new problem-solving approaches to teaching. The standards and updated teacher

¹ The text of this chapter is adapted from: Parker, M., Luft, J. & Tobin, B. (2019). "Funding teacher preparation: What we did. What we learned." [S. D. Bechtel, Jr. Foundation](#).

credentialing requirements presented an opportunity and need to ensure that both current and future educators are prepared to provide students with the knowledge and skills required for success.

Foundation leaders have long valued adult practice in the classroom as essential to students developing the skills that they need to participate fully in the 21st century economy and civic life in their communities. A focus on the success of in-service teachers naturally led the foundation to consider how best to support the preparation of teachers before they enter the profession.

The New Generation of Educators Initiative was predicated on the belief that quality instruction is more vital than ever in California. Today's teachers must be experts in helping all students learn based on demanding academic standards. Teachers also must be effective conduits for social-emotional learning and champions for equity and inclusion. It's a big job, and every teacher needs the abilities and confidence to enter the classroom ready to succeed.

When teachers have quality preparation, they are able, on day one, to help students stay on track with educational progress. Quality preparation increases the likelihood that teachers will remain in their chosen profession, helping to break the cycle of teacher shortages that cause administrators to recruit educators who have not yet received their preliminary teacher credential—a problem that research shows is especially acute in high-need schools.

Students, communities and teachers all benefit when the best possible training takes place prior to a new educator's first days and years as a classroom leader, and the Foundation chose to pursue impact in this arena.

Why Did We Invest in the CSU?

The S. D. Bechtel, Jr. Foundation's investments reflect a longstanding desire to preserve and support the large public systems that are a valuable resource for our state. Whether through investing in our state parks system, our state's water and land conservation infrastructure or our K–12 public schools, the Foundation has sought to partner with, rather than disrupt, existing public systems. This approach allows for the potential that improvements would reach the broadest possible scale most quickly and capitalize on existing partnerships, infrastructure and expertise. It should be no surprise, then, that the Foundation directed its teacher preparation investment to the CSU. The CSU prepares nearly half of the California's teachers and the Foundation had a longstanding partnership with both individual campuses and the CSU Chancellor's Office.

The S. D. Bechtel, Jr. Foundation often explored developing major initiatives by making initial grants to potential partners. This was the case with teacher preparation. The New Generation of Educators Initiative (NGEI) grew out of a fruitful experience with the CSU Chancellor's Office and its Department of Educator Preparation and Public School Programs. Information and relationships developed through this initial grant experience shaped the Foundation strategy for NGEI.

The CSU Chancellor's Office played a vital, ongoing role in this initiative, providing perspective and thought partnership in the evolution of the work, and acting as a system-wide connector and communicator of lessons, enhancements and opportunities emanating from the initiative.

How Was the Initiative Structured, and What Did Foundation Funds Support?

In March 2014, the Foundation's board approved an initial \$3 million grant to the CSU Foundation to support the CSU Chancellor's Office in beginning the NGEI. July 2014, the CSU Chancellor's Office convened a faculty working group to begin to conceive of the Key Transformation Elements (detailed in a later section) and the structures that could support transformative change and build on existing system strengths. That working group managed an initial request for proposals (RFP) process and approved initial one-year grants, eight to campuses proposing significant shifts and five more to campuses proposing smaller scale changes.

Following learning from the initial round of grants, the Foundation ran a second RFP in early 2016, that was open to all CSU teacher preparation programs (see [1.1 NGEI Request for Proposals](#)).

Many campuses submitted proposals, and a panel of independent scorers overseen by the Foundation selected 11 applicants to receive multi-year grants.² Awards were available at three levels based on a number of indicators of program size, including the number of credentials issued in the prior year, and campuses were notified through the RFP process of the amount of funding for which their partnership was eligible (\$200,000, \$300,000 or \$400,000 per year over three years). Campuses were required to share grant funds with at least one district partner in NGEI, with no one partner retaining more than 60% of funds. Many campuses identified more than one district partner, with several more eventually adding partners in the second or third years of the grant. Although perhaps an arcane detail to some, it is worth noting that indirect expenses were capped at 8% or the district's rate for state and federal grants, whichever was lower, and there was a restriction on campuses charging indirect expenses on funds sub-awarded to district partners. These restrictions served to maximize the Foundation's investment.

The most common use of grant funding was support for partners' time to engage in planning, training and calibration. Each organization engaged in the partnership was required to allocate funds for at least one person's half time work (0.5 FTE) on the shared effort, with the additional requirement of at least a third of someone's time (0.3 FTE) to serve as a Continuous Improvement Lead (CIL), engaging with evaluators and supporting the team's collection and use of data for improvement. Shifts to initial budgets were permitted with Foundation approval, and the most common request for budget shifts was to ensure ample training and calibration time on the use of newly adopted observation rubrics.

While the initiative reflected a significant investment, Foundation staff were struck that many grants were underspent, with nearly all grantees requesting no-cost extensions beyond the original end date for the funding, even as significant and meaningful changes to programs were being made. The most important expenditures seem to have been in the roles that allowed partners to focus on the partnership, on the technical assistance and shared learning provided, and on the time it took to generate buy-in and calibration among multiple stakeholders.

The Foundation believes that investment in the capacity of teacher education leaders is a good value in terms of philanthropic dollars.

The Foundation believes that investment in the capacity of teacher education leaders, particularly the professional development of teacher education faculty, supervisors, mentor teachers and coaches, is a good value in terms of philanthropic dollars. Ensuring that teacher candidates will be guided in their preparation by a set of mentors, faculty and other supporters who can all provide feedback and coaching from the same playbook is particularly beneficial and, in the view of the Foundation, will generate significant improvements to teacher candidate learning which may lead to increased teacher effectiveness, retention in the profession and a multiplier effect over years as each program graduate impacts thousands of students.

In addition to direct grants to campuses, the Foundation also invested, through separate grants and contracts, in system-wide data infrastructure and scaling efforts at the CSU Chancellor's Office, as well as in evaluation, technical assistance and grantee convenings. These additional supports proved important in supporting the learning and development of faculty and district leaders, in providing access to promising practices in developing program structures and improvement supports, and in creating opportunities for participants to share learning with others doing work across the state.

Far from a single grant, the multiple complementary investments involved in the NGEI, some of which were added based on identification of grantee learning needs spotted in the first years of the work, allowed Foundation staff to be responsive to opportunities that emerged during the term of the initiative. Making these multiple grants directly, while time intensive on the part of Foundation staff to monitor and assess progress, also allowed staff to see patterns across the various investments, support coherence among the multiple technical assistance providers and stakeholder groups, and provide clear assessments to the Foundation's board and leadership as to the successes and challenges along the way.

2 Of the 11 selected CSU campuses, 10 participated in the full three-year grant: Bakersfield, Cal Poly San Luis Obispo, Channel Islands, Chico, Fresno, Fullerton, Long Beach, Monterey Bay, Sacramento and Stanislaus.

What Was the Strategy Behind the Initiative?

The overarching goal was to demonstrate improved practices that prepare new teachers for success on their first day in the classroom, to scale and sustain these improvements across the CSU system, and to inform and influence the approaches used by other teacher preparation program providers as well as funders and policymakers supporting their efforts. The strategy focused on strengthening rigorous teacher preparation that is relevant to the unique needs and contexts of local public school districts. It therefore featured support for partnerships between CSU colleges and schools of education and school districts in their respective geographies. The majority of grant dollars were allocated to colleges or schools of education on CSU campuses; these lead grantees were in turn required to engage school districts in collaborative improvement efforts and to provide funds to districts to support these efforts.

Primary components of the strategy included:

1. Developing a set of five “Key Transformation Elements” to guide improved teacher preparation practices by partner CSU campuses and school districts.
2. Funding staff on campuses and in districts, typically through a 0.5 FTE position in each institution, to ensure dedicated attention to activating, supporting and coordinating improvement efforts.
3. Providing robust technical assistance through experts in clinical preparation for teachers, teaching practices that disrupt patterns of inequity in public education and improvement science.
4. Conducting evaluation and facilitating learning throughout the initiative, including supports for individual campuses and campus/district partnerships and collective learning through initiative-wide convenings.

What Are the Key Transformation Elements?

A CSU faculty work group was engaged through initial grant funding to offer recommendations on critical elements that would significantly advance teacher preparation practices. The Chancellor’s Office, Foundation staff and technical assistance providers worked with these recommendations to identify a set of five Key Transformation Elements that became focal points for all initiative activities. These “KTEs” were put forward in the NGEI Request for Proposals.

KTE 1: Forming deep partnerships between campuses and districts that begin with a shared vision of effective K–12 instruction and take shape through a cohesive learning experience for candidates that spans pre-service through induction.

KTE 2: Collaboratively defining prioritized skills—together, campuses and districts identify the abilities that are most vital to teacher preparation based on the needs of local students and instruction aligned with Common Core State Standards and Next Generation Science Standards.

KTE 3: Preparing through practice in school sites, ensuring that candidates have high-quality opportunities to enact prioritized skills via hands-on instruction in the classroom supported by thoroughly prepared teacher mentors.

KTE 4: Creating a culture of feedback for teacher candidates that is data-driven, specific and actionable, featuring ongoing and coordinated inputs from CSU faculty, supervisors and teacher mentors.

KTE 5: Using data to measure progress toward proficiency as well as gaps in prioritized skills; employing the principles and methods of improvement science to continuously elevate the quality of educator preparation programs.

These KTEs became the driving force behind the initiative; all projects built their goals and budgets around these KTEs and wrote annual reports for the Foundation that described how their efforts were moving forward these essential elements.

What Technical Assistance and Learning Supports Were Provided?

From the outset, the initiative featured technical assistance and learning supports to help partners transform their approach to teacher preparation. Initial providers and services featured the following three entities.

- The [National Center for Teacher Residencies](#) (NCTR) advised partnerships on designing high-quality clinical preparation and assisted grantees in assessing and improving their approaches. NCTR supported partners as they worked toward aligning campus instruction and supervision of candidates with the clinical experience and mentoring of candidates in district classrooms.
- [SRI International](#) and [WestEd](#) provided site-based formative evaluation and initiative-level evaluation. This research team informed strategy evolution throughout the initiative by investigating several dynamic factors including teacher preparation pipelines, changes to the nature of credentialing programs, effectiveness of teachers and campus systems for supporting ongoing improvement.
- [ConsultEd Strategists](#) supported cohort-wide knowledge sharing and learning by offering a variety of online and in-person networking opportunities. This group helped to organize annual convenings for campus and district partnerships, Foundation leaders, stakeholders and supporting entities with the purpose of sharing promising practices in teacher preparation.

Engagement with evaluators and participation in convenings were stated as requirements in the RFP document. Participation with the National Center for Teacher Residencies was optional.

As the initiative evolved and the Foundation learned more about the needs and interests of grantees, additional experts were brought into the initiative and offered as supports for grantees. These optional technical assistance offerings were presented as ways for grantees to elevate the bar with their teacher preparation practices. Virtually all grantees chose to participate in these offerings.

- [TeachingWorks](#) at the University of Michigan supported campuses in strengthening math methods coursework for credential candidates. TeachingWorks emphasized a set of high-leverage teaching practices to increase student learning while disrupting patterns of inequity in K–12 education. The Foundation funded a process through which individual faculty self-nominated to become TeachingWorks Fellows and then participated in an intensive process to redesign one of their instructional methods courses.
- Additional specialists from WestEd led capacity building with campuses around improvement science. The Foundation funded Continuous Improvement Fellowships that provided ongoing training and support for individuals leading improvement projects on participating campuses. The Foundation also provided mini-grants, supported by WestEd, enabling CSU campuses not receiving multi-year initiative funding to gain knowledge and experience with improvement practices.

The Foundation added convenings based on a high level of grantee interest in connecting with peers in the initiative. One convening per year was stated in the RFP as an expectation for grantees; two convenings per year became the norm as the initiative unfolded. All grantees chose to participate in this optional second convening each year.

In the initiative's later years, deans of CSU schools or colleges of education on campuses not receiving multi-year initiative funding were also invited to participate in convenings. Virtually all joined these gatherings, providing their institutions with access to knowledge and practices developed by initiative partners.

In addition to the support offered to individual campuses, a complementary set of grants intended to advance the success of the full CSU system was awarded by the Foundation to the Educator Quality Center ([EdQ Center](#)), a specialized unit within the Chancellor's Office Department of Educator Preparation and Public School Programs. The EdQ Center is a central resource in CSU systemwide efforts to build a culture of data use and improvement in teacher preparation. The EdQ Center operates a set of customizable dashboards for all campus schools or colleges of education; conducts surveys with candidates completing their studies on CSU campuses, with alumni after they gain experience teaching in K–12 classrooms, and with employers of first-year CSU teachers;

and is leading a process through which many or all campuses could standardize on a common data collection system. Foundation investments were aimed at building the capacity of the EdQ Center to do this work, including becoming an expert on data collection and usage, and a resource for campuses applying the principles of improvement science.

Which Grant Requirements Led to the Most Promising Outcomes?

In formulating the initiative, the Foundation wrestled with the extent to which it should prescribe, rather than ask partners to define, program components. Several Foundation-required items ultimately proved important to grantee progress.

Observational Rubrics. The grant asked partnerships to select and use a rubric to assess candidate instructional skills and behaviors and provide them with feedback. Partners could choose between researching and adopting an existing rubric or creating a custom tool. In each partnership, the rubric became a focal point of collaboration that was instrumental to their efforts to improve teacher preparation. Campuses used the rubric to train faculty and teacher candidate supervisors in providing feedback; districts did the same with mentor teachers and administrators who observe candidates in classroom settings. Partners built shared data platforms around their respective rubrics. Candidates understood the rubric used in their locale and received feedback based on its components. It is unlikely that all partners would have chosen to prioritize a common rubric had it not been a requirement of the Foundation's RFP. As the initiative neared conclusion, virtually all reported that their rubric had been a vital element of their teacher preparation improvement efforts and planned to continue use after funding concluded.

If we could start over, the Foundation might consider beginning with a small set of tested rubrics and asking grantees to select from these extant resources, as some grantees spent considerable time building custom rubrics that were not very different from products already available to them. Extant products typically are supported by trainings or other technical assistance, which simplified the task of adopting a new rubric for campuses who selected an extant tool.

Staff Support. The initiative provided funds for a required half-time coordinator on campus and a half-time coordinator at each school district. These positions proved effective in leading and supporting collaboration across institutions. For instance, a half-time coordinator at the district office worked alongside his or her corollary at the university to co-lead the selection of candidates, mentor teachers, and clinical sites, as well as to design and deliver professional development to stakeholders. In many cases, grantees identified these coordination roles as critical to the success of the partnership going forward and intend to reallocate existing funds to continue to staff the project in this way. It proved important, grantees shared, to have one or two people take responsibility for the success of the work rather than rely on a small percentage of many people's time to get the work done.

Continuous Improvement Lead. The Foundation required the appointment of a "continuous improvement lead" person on each campus. This Continuous Improvement Lead facilitated changes in assessment practice, including use of data to identify and address opportunities to elevate quality teacher preparation practices. This role proved helpful both to ensure that participation in an external evaluation did not pose an undue burden on the team and to provide time for the collection, analysis and use of data for decision-making and learning. In many cases, the Continuous Improvement Lead designed new data tools and infrastructure as well as facilitation structures (such as ongoing team meetings to review data) that will continue to be used following the term of the grant.

Peer Learning. Grantees also found significant value in participating in peer-learning, primarily through convenings in which each partnership team had the opportunity to showcase their progress, gain knowledge and encouragement from others, and address challenges common across the initiative. In addition, the Foundation-funded technical assistance team provided an online repository of tools and resources used by participating partners and made these items available to others in the initiative.

Opt-In Technical Assistance. While all grantees interacted with technical assistance providers such as NCTR and TeachingWorks through required learning community convenings, the Foundation did not make additional technical assistance activities a requirement; rather, grantees could opt-in to deeper engagement with NCTR and/or select faculty from their sites to join fellowships with TeachingWorks or WestEd. The opportunity to select into these experiences, which brought additional resources but also additional requirements to the teams who chose them, meant that only those teams who identified the need for technical assistance took advantage. Grantees who did engage reported that they found significant value in working with technical assistance providers who used their expertise, experience and outside perspective to inform, inspire and guide partners in advancing their practices. Grantees cited their work with TeachingWorks and the National Center for Teacher Residencies, among others, as helping to avoid “reinventing the wheel” and allowing teams to build from what has been learned in other settings about effective university and district partnerships.

Professional development and support for teacher education faculty proved to be highly valued by grantees, many of whom reported not having received significant professional development focused on the work of teacher education. The experience of working with CSU faculty and their partners also proved transformative for the technical assistance providers, many of whom have shifted their offerings to comport with their new understanding of how fruitful partnership with teacher education programs can be. TeachingWorks, for instance, will now offer a new fellowship based on their learning from engagement with CSU faculty fellows.

What Lessons Did We Learn About the Practice of Grantmaking?

As the initiative reaches its endpoint, Foundation program staff offer these additional reflections on several grant characteristics that also proved important.

Continuity of Funding. Continuity of funding through multi-year grants was important, as transforming practices in large institutions takes time, involves culture change and requires space for experiments and learning. The first year of implementation of grant-funded work was especially difficult; most grantees underspent their budgets as they underestimated the scope of initiative ramp-up called for in their respective contexts. Campus teams gained deeper appreciation for the effort and time required to make significant, lasting change in teacher preparation partnerships and practices, including insight into what it takes to conduct systemic improvement informed by data. Technical assistance providers needed time to gain trust and traction with grantees, and to synchronize their collective efforts in ways that made sense to grantees and allowed each provider to contribute to grantee progress.

Ensuring Staff Time. Providing dollars to ensure sufficient staff time devoted to initiative work was also essential. The Foundation and technical assistance providers saw benefits that arose from enabling each institution and partnership to have people with clearly defined responsibilities and enough time to plan and lead change. Focusing energy and having space to reflect on current practices was inherently valuable. For example, these grants caused campus teacher preparation faculty to spend substantial time with district leaders and this support allowed the release time necessary from a full faculty workload; this involvement yielded dividends as faculty members helped formulate and champion changes in teacher preparation practice.

Responding to Opportunities. Well-timed small investments can make a big difference. As opportunities surfaced to accelerate or amplify grantee progress, the Foundation responded with expanded supports. For example, adding a second convening each year fueled added momentum, learning and accountability across the grantee cohort. The Foundation also introduced improvement mini-grants in the fourth year of the initiative, offering grants of up to \$15,000 to CSU campuses beyond the 11 core NGEI grantees. These mini-grants allowed the teams newly joining the initiative to focus on understanding a single problem with support from WestEd technical assistance providers. While the grants were significantly smaller than the multi-year grants made to the original NGEI grantee campuses, they supported campus teams’ commitment to continuous improvement and were perceived as highly valuable by the campus teams who received them.

What If We Could Start Over?

Based on knowledge gained through implementation of the initiative, Foundation program staff point to several ingredients that were missing or under-emphasized in the initiative design and Request for Proposals. Looking back, the Foundation would have strengthened the initiative design and Request for Proposals in a number of ways, including an explicit focus on the following components.

Preparing Diverse Candidates. If beginning today, the Foundation would more explicitly focus on supporting programs to recruit and prepare candidates reflective of the rich diversity of California, especially given the mutual interest of the Foundation and the CSU in ensuring that all students, including low-income students, students of color, English learners and/or students with disabilities develop the skills they need to participate fully in the 21st century economy and community life. While most CSU campuses selected district partners that were considered high need based on student population characteristics stated above, and while these campuses drew teacher candidates from local communities that included a high number of students of color and low-income students, a more pronounced intent at the outset to ensure and support a diverse teacher candidate pool could have strengthened initiative implementation from the beginning.

Involving Education Deans. If writing the RFP again, the Foundation would include an explicit requirement for active grant involvement by the dean of the school or college of education. This campus office is pivotal to setting a tone for improvement and leading change, including approving shifts in structures, practices and resource allocation. Many deans were substantively involved from the beginning of the grant; in other cases, their involvement happened after teams were well into the process of formulating plans and grappling with the size of the task ahead. While all deans embraced information and supported approaches emanating from the initiative, early and consistent involvement of these leaders could have helped facilitate alignment and progress among partner teams.

Advancing the Residency Model. The Foundation would consider a more explicit focus on the residency model as central to teacher preparation. Initiative activity and learning in many sites affirmed that clinical preparation merits focus as a signature element in teacher preparation. Foundation staff came to view high-quality residencies as the gold standard in this category. In the course of the initiative, the Foundation increasingly encouraged and supported effective residency approaches, finding that there is great value in candidates being mentored by a carefully selected and trained teacher who models best practice skills and pedagogies; participating in the full arc of an academic year, preparing for the rhythms and activities of the school calendar; being supported by educators on their campus as well as in the school district who collaborate to make the candidate experience coherent. Quality clinical residencies were increasingly seen as an effective means of teacher preparation. Residencies may be a central component in efforts to affect systemic change. If the initiative were being redesigned today, Foundation staff would focus more resources on engaging campus teacher preparation faculty and teacher candidate supervisors, as well as district administrators and mentor teachers, to advance application of the residency model in their contexts.

Compensating Mentor Teachers. The Foundation would advocate for ensuring that mentor teachers receive compensation for the significant time they spend with their candidates. The initiative yielded new insights for Foundation staff regarding the importance of mentor teachers. These professionals bring passion, experience and perspective to their relationships with teacher candidates. They welcome instruction and support to equip them to effectively coach and help candidates develop. Those involved with NGEI expressed appreciation for opportunities to learn about observational techniques, co-teaching practices and feedback approaches; these experiences helped them be more confident, consistent and constructive in their work with candidates. A stipend or other form of payment is an important means for valuing the importance of this work and recognizing the contributions of the mentor.

Providing Financial Support for Residents. The Foundation would also direct additional resources to ensure financial support for residents, making it possible for candidates to benefit from a full year of co-teaching and coaching without adding to the debt most incur in college, and minimizing the need for a second job that competes with or detracts from the residency experience and opportunity to grow as a professional teacher. Foundation staff came to understand that the residency model, particularly if supported by a stipend, can be an especially effective means to provide high-quality clinical experiences for candidates from low-income communities and communities of color who seek to contribute to their home regions by teaching in high-need schools. This awareness, combined with learning from

programs such as [Raise Your Hand Texas](#), led the Foundation to collaborate with the Chancellor's Office, in 2019, to provide [300 scholarships](#) of \$10,000 each supporting residency-year preparation for candidates with financial need who intend to teach for at least two years in a high-need school.

What Other Considerations Might We Recommend to Future Funders of Teacher Preparation?

The Foundation's experience in implementing the NGEI yielded additional lessons that may benefit other funders doing related programming. We learned that funders must work with the realities and incentives inherent to institutions of higher education. The Foundation gained appreciation for the factors that shape the work of campus faculty, including the time devoted to publishing in addition to instruction and the relatively limited time for off-campus learning. More investment in helping each campus team identify and align initiative activities with current incentives could have supported greater impact. This includes understanding and addressing particular challenges unique to each context. For example, some campuses in rural regions produce teachers for a large number of relatively small school districts; this reality carries implications for configuring and resourcing effective teacher preparation partnerships.

Through this initiative experience, Foundation program staff also learned that there is a hunger for learning among faculty and administrators in teacher preparation programs. Educators on CSU campuses wanted to benefit from the experiences and lessons gained by other grantees, and to connect with colleagues on campuses throughout the CSU system. Similarly, there is a desire for capacity building; Foundation investments in technical assistance, fellowships, and special learning opportunities were put to good use by campus and district partners.

Data are essential to progress, and use of data can be embraced by all, including campuses and individuals in need of experience or structures that support data collection and use. The initiative's emphasis on data to fuel improved performance for preparation programs and their candidates represented significant change for some participants. Over time, all gained confidence with the use of data as an essential and ongoing component in their program design and delivery, and they took strides to build protocols for ongoing data collection and usage. The initiative had a positive effect on the data practices of campus and district teams; many reported meaningful progress in their ability to identify and address improvement opportunities.

We also learned the importance of investing in building public school district capacity to improve, scale and sustain practice. Public school districts, especially those classified as high need, typically lack resources and operate with minimal infrastructure; they lack capacity to conduct systemic change efforts. Initiative research showed that, between 2014 and 2016, the number of teachers hired with an intern credential, a provisional intern permit or a short-term staffing permit increased dramatically in some districts. These districts lacked the finances, staff and structures to address this need. Today, the Foundation would focus resources on building out the residency model for teacher preparation in these districts, including using the model as the basis for engaging mentor teachers, administrators and all staff in elevating teacher preparation, induction and supports, while building a culture of data use that supports these efforts.

Our work taught us the importance of incorporating communications early in the life of an initiative. The Foundation made active use of communications in the second half of the initiative to facilitate knowledge sharing within and beyond the network of grantees, creating and disseminating case studies and videos, and adding content and products on an [NGEI page](#) of the CSU website. A more robust communications effort sooner in the initiative, with an earlier emphasis on helping technical assistance providers as well as grantees think about communications opportunities associated with their work, would have brought additional benefit.

What Else Would the Foundation Do If It Were to Continue in This work?

The reality of the Foundation's conclusion in 2020 precludes longer-term investments. If the Foundation were perpetual, it would consider funding evaluation that examines the extent to which changes in teacher preparation practices affect student outcomes including academic achievement in K–12 classrooms, as well as teacher retention.

2: BUILDING UNIVERSITY AND SCHOOL DISTRICT PARTNERSHIPS

KTE 1 Partnership: Maintain and deepen partnerships between the CSU campus and the K–12 districts who hire the teachers trained by funded pathway(s), using data about student populations, instructional practices and hiring projections to align programming as much as possible to local needs.

Goal: By 2018–2019 school year, at least 75% of teachers hired by the partner district from the partner CSU will have been prepared via a partnership program. The campus and district will each have at least one staff member spending at least 0.5 FTE on maintenance of the partnership, with sustainable funding in place to continue these roles.

The first Key Transformation Element focused on the formation and maintenance of partnerships between the CSU campuses and local school districts. While specific partnership goals varied, all projects embraced systematic collaboration between teacher education programs and district personnel, including administrators, teachers, specialists and staff. In this chapter, faculty representing projects at CSU Stanislaus and CSU Long Beach describe how the alignment of campus and district goals led to outcomes that benefited all stakeholders.



California State University, Stanislaus

California State University, Stanislaus, with a student population of approximately 9,000, is located in the central California valley midway between the San Francisco Bay Area and the Sierra Nevada Mountains. Each year, CSU Stanislaus recommends approximately 300 candidates for teaching credentials. With their NGEI partners from Turlock Unified School District and Ceres Unified School District, this partnership launched a residency pathway, developed a process for selecting mentor teachers and built a system of teacher professional development to support science instruction in schools.



REFLECTION: Noelle Won, CSU Stanislaus

Launching a Residency Pathway

Over the three-year grant, the partnership between CSU Stanislaus (Stanislaus State) and our two partners, Turlock Unified School District and Ceres Unified School District, became one of mutual trust, which put us on a positive trajectory of future collaboration. One of the most significant accomplishments of our leadership team was the development and launching of our brand-new residency pathway. Warriors Teach! is a year-long residency for candidates working toward one of three California Credentials: Multiple Subject, Multiple-Subject with Bilingual Authorization and Education Specialist. After two years of planning and development, we recruited our first cohort of 17 residents in fall 2019. Residents were placed with mentor teachers in both partner districts, with our shared vision of preparing the highest-quality teachers in high-need Spanish bilingual and special education classrooms.

A significant component of our planning occurred with the National Center for Teacher Residencies (NCTR), a resource that was made available through the NGEI grant. University faculty plus one representative from each district attended NCTR workshops, which was important because representatives from our campus and local districts simultaneously learned about residency programs. Prior to 2019, our partnership had discussed the possibility of a residency program. Usually when districts partner with universities for residency programs, their aim is to help prepare candidates who will accept teaching jobs in their districts, creating a pipeline. However, there was no perceived shortage of teachers in these districts; in fact, most candidates who earned credentials from programs at Stanislaus State wanted to work in those districts. However, at the NCTR workshops, the district representatives saw the benefits of “home growing” candidates. If candidates were prepared in year-long residencies in the district, upon earning a credential these teachers would have a deeper understanding of the teaching context. In essence, the district would be hiring a second-year teacher rather than a first-year teacher. After two years of discussion, the residency was launched, with financial support from two sources: a grant from the California Commission on Teacher Credentialing and residency scholarships for candidates from the CSU Office of the Chancellor.

The process of launching a residency program taught us that in order to have a true partnership, we need to collaborate from the outset and be co-owners of our work. This co-ownership means that district representatives work with the university on decision-making for the residency, such as in the candidate admission process. It means that if there is an issue or problem with a candidate or mentor during the program, we all share the responsibility and work together on finding solutions.

Mentor Teacher Selection and Development

As another component of our work, we wanted to recognize the strong impact that cooperating teachers had on the development of our candidates. Our partnership began thinking about the role of cooperating teachers as teacher educators and adopted some shared criteria that defined the qualities of effective mentors. These shared criteria were adapted from the Seattle Teacher Residency and include descriptions of five roles of cooperating teachers:

1. **Teacher Educator:** connects theory and practice; has skills to support and challenge student teachers; models thorough planning; has clear understanding of co-teaching and the 5D+ rubric.
2. **Effective Teacher:** shows evidence of content knowledge, student engagement, effective classroom management, positive relationships with students; has equity lens and engages with parents and families; uses data-driven planning and instruction.
3. **Coach:** is an active, reflective listener and a good questioner; understands continuum of teacher learning; has strength-based view of student teachers when providing feedback.
4. **Learner/Collaborator:** has the disposition of a lifelong learner; engages in reflective practice; is open to new ideas; engages in collaborative conversations with university supervisor and teacher candidate.
5. **Assessor:** completes formative and summative evaluation forms in a timely manner.

Supplement [2.1 Stanislaus School Site and Cooperating Teacher Criteria](#) describes these roles and responsibilities.

With these expectations in mind, the districts engaged in additional processes to select teachers to serve as mentors. For example, in Turlock Unified School District (TUSD), elementary principals developed a list of those teachers who they believed were most qualified to support student teachers. To make such recommendations, principals asked themselves the following questions:

- Which teachers demonstrate the strongest teaching skills?
- Which teachers are eager to develop and improve their mentoring skills?
- Which teachers are willing and able to share their knowledge and experience with colleagues?

In addition to cooperating teacher selection, our partnership considered how best to provide ongoing professional development for these mentors. Early in the NGEI grant, Stanislaus State's Dean of the College of Education, Kinesiology and Social Work reached out to superintendents and asked for district personnel who could serve in a liaison role with the university. Both districts delegated the key liaison role to their induction coordinators, who connected the NGEI project to their respective induction programs. Induction coordinators became an integral part of the NGEI work. They led professional development for current mentor teachers or those who were interested in becoming mentors; they implemented workshops to welcome student teachers, to support math and science instruction and guide co-teaching implementation.

Stanislaus State's link with the district induction programs has become one of our greatest assets. Induction coordinators have inside access to the strongest mentors used for their new teachers. This connection has led to better coordination of professional learning activities and more intentional placement/clustering of teacher candidates with cooperating teachers who meet shared criteria.

NGSS Collaborative: Professional Development for Educators

One key learning activity that embodied the deepening partnership between Ceres USD, Turlock USD and Stanislaus State was the Next Generation Science Standards (NGSS) Collaborative, which was inspired by Chico's NGEI-supported Triad Project. Our NGSS Collaborative invited expertise from Turlock Unified School District's science instructional coaches, who provided the pedagogical framework, and science faculty from the College of Science, who provided the deep content knowledge. District teachers and university science professors formed teams, supported by science instructional coaches, to develop NGSS units using an inquiry-based approach anchored in phenomenon. The NGSS Collaborative sought to support teachers' transition into the Next Generation Science Standards and to help our science content faculty learn more about how

expectations for teaching and learning science were changing. Supplement [2.2 Stanislaus NGSS Collaborative Overview](#) includes the goals, description and timeline for this collaborative.

We knew that in order for professional development to achieve long lasting effects, participants needed to work on a shared task that was sustained over time. We learned the importance of pushing this initiative through from the bottom up and top down. After the first collaboration cycle, new participants were recruited by previous participants, and district partners and instructional coaches helped identify other teachers who were interested in science. To increase science faculty participation, the dean of the College of Education, Kinesiology and Social Work contacted the dean of the College of Science, who communicated the opportunity to the science department chairs. Another factor in successful recruitment was the positive rapport and mutual respect between the college deans and participating faculty in the NGSS Collaborative. This relational aspect cannot be overstated, because it was the grease that moved the gears. In addition, our shared investment in designing “real science” lessons, with excitement for both the science content and teaching, added momentum that helped sustain the work over time.

A significant outcome from the NGSS Collaborative was the partnership between district teachers and faculty in the College of Science. Each team met and worked together to plan and implement units, and they shared their experiences at a symposium. An example of one team’s unit on energy, using the 5E model of instruction, is shown in the supplement [2.3 Stanislaus NGSS Unit Plan Sample](#).

The NGSS collaborative has built new relationships between science faculty and K–6 teachers in participating districts that we expect will continue into the future. This connection is particularly important to the districts that are seeking to improve science education, especially in our region where there is limited access to persons with specialized knowledge. The collaborative has also enabled teacher education faculty members to make new connections with professors in the College of Science, potential mentor teachers and instructional coaches in the school districts.

The NGSS collaborative has built new relationships between science faculty and K–6 teachers in participating districts that we expect will continue into the future.

However, we realized that the NGSS collaborative could go further by more explicitly including teacher candidates in the process. Ideally, it would have been beneficial for student teachers and their cooperating teachers to participate in the collaboration together, to build cohesion. Although the 12 district teachers who participated could be recruited as mentors in the future, only one teacher was a mentor for a teacher candidate during the NGSS Collaborative timeframe. One challenge to developing a Triad model similar to that of CSU Chico (with a candidate, mentor and science faculty member) was the traditional course structure that was in place for teacher candidates. Most of our candidates completed their science methods course the semester before student teaching, and the Triad model aligns science methods coursework with clinical practice and unit construction. Another challenge was the absence of core science methods faculty participation from the Department of Teacher Education to bridge coursework and clinical practice.

Both of these challenges led to positive changes. We designed our new residency pathway so that coursework is completed concurrently with student teaching. This design means that candidates can be part of the unit development process with their cooperating teachers. Additionally, the education department at Stanislaus State recently hired a new full-time science faculty member who can now take the lead in the future with the NGSS Collaboration.

Scaling and Sustaining

At the university, we will continue to deepen our partnership with Ceres and Turlock, while expanding our partnership with the addition of four additional districts. Identifying the right person in the district makes all the difference; the right person is a leader who shares a similar vision and passion for advancing the achievement of all students, who believes in the power of collaboration and who is willing to invest time and energy into the development of new teachers. This person is also the key to partnership sustainability.

We will continue meeting with district partners each semester to share instructional practices, hiring projections and data. We will continue to discuss teacher candidates' learning needs so that we can align teacher preparation coursework and professional development for teachers at all career stages.

Until 2023, our Warriors Teach! year-long residency will be supported by additional grant funding, which pays tuition and stipends for resident teacher candidates and stipends for mentor teachers. As part of this residency, we will continue the NGSS collaborative, with the support of Stanislaus State's newly hired science educator. By the time that funding is expended, we hope our data will provide compelling evidence for continuing funding, and we know we that we will have built a large pool of qualified, practiced mentor teachers to support future teacher candidates.

Partner districts have committed to continued funding for induction coordinators. In Turlock USD, the district will be able to support the position through induction funds in the Local Control and Accountability Plan (LCAP). The induction coordinator will work with student teachers to support district hiring needs, thereby resulting in student teachers becoming induction candidates within Turlock Unified School District.

A coordinated model of teacher professional development will also continue. As Ceres USD continues to support teachers in becoming life-long learners, professional development workshops will continue to be available. Ceres USD will use LCAP funding to continue to support workshops on mentoring skills and co-teaching, and teachers will receive compensation for their participation. Ceres USD will also use their own funds to continue to support professional learning activities that align with NGEI goals. In addition to supporting travel to off-site professional conferences and institutes, district funds will support bringing consultants to sites to deepen our understanding of unit planning, visible learning, feedback, success criteria and teacher clarity.

Participation in NGEI has taught us the importance of partnership and, more specifically, the importance of collaboration within the partnership. We learned that for a true campus-district partnership, we need to make the time and space to meet regularly, set goals, develop products, test ideas and share professional growth. Partnership is important to everything we do in teacher preparation, and to be successful, it has to be mutually beneficial.

The author would like to thank the following individuals for their contributions to the NGEI work:

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Heidi Lawler, Turlock Unified School District

Ronda Munoz, Ceres Unified School District

Oddmund Myhre, CSU, Stanislaus

Kirsten Saint, Ceres Unified School District

California State University, Long Beach

CSU Long Beach is located near the coast of Southern California, 25 miles from Los Angeles. With a total student population of over 36,000, each year approximately 530 credential candidates are recommended for a California teaching credential. One aim of their NGEI work, in partnership with Long Beach Unified School District, was to ensure high-quality placements for their student teachers by revamping their model for clinical placements of credential candidates with mentor teachers.



REFLECTION: Lisa L. Isbell, CSU Long Beach

Clinical Placement of Teacher Candidates

One of the most significant outcomes of our NGEI work was creating a placement process that would match teacher candidates with mentor teachers using a process that was well-defined and intentional. Our challenge was to place candidates with the most qualified mentors, even within the confines of a complex placement structure.

At CSU Long Beach, candidates complete three clinical fieldwork placements, each with different purposes. Prior to admission, in pre-requisite courses, candidates participate in a minimum of 60 hours of fieldwork (Clinical 1 Fieldwork) during which they observe exemplary teachers. Once they are admitted to the program, they engage in 50 hours of Clinical 2 Fieldwork that is application based, aligned with pedagogy courses and requires application of assessments and strategies with individual or small groups of students. In their immersive Clinical 3 experience, candidates observe, co-teach and solo teach for a minimum of 500 hours over one or two semesters.

Prior to our participation in the NGEI grant, candidates within the Multiple Subject Program and Education Specialist Program “self-placed” and found their own placements for Clinical Fieldwork 1 and 2. Due to this self-placement, there was great variation in the quality and substance of these early fieldwork experiences for our teacher candidates. It was the goal of our NGEI work to ensure that students were placed in high quality fieldwork settings with exemplary cooperating teachers who demonstrated the pedagogical framework supported by CSU Long Beach and the California Teaching Performance Expectations. In addition, the initial NGEI partner, Long Beach Unified School District (LBUSD), wanted more control over where candidates were placed within their school system.

This desire on the part of both partners led to the development of an extensive clearance and placement procedure, supported by the CSU Long Beach Office of Clinical Practice (OCP) and the LBUSD Professional Development Center (PDC) staff. A new protocol and application process for placing students into site-based, clinical experiences is outlined in [2.4 Long Beach Clearance Protocol and Application](#). This process requires that all teacher credential candidates across the college who wish to complete fieldwork in the Long Beach Unified School District be contacted prior to the beginning of the semester to begin the clearance and placement process.

Candidates who wish to complete any portion of fieldwork in LBusD must complete an application and fingerprint clearance with the district and are assigned to classrooms based upon the specific pedagogy courses they are taking in a given semester. Classrooms and teachers have been specifically identified by LBusD based on the types of fieldwork assignments students must complete in each of their courses. Two key personnel from the LBusD Office of Curriculum, Instruction and Professional Development were identified to be responsible for the clearance and placement of teacher candidates into clinical fieldwork classrooms. The Human Resource Services Office also supported the program by providing fingerprint clearance to CSU Long Beach candidates at no charge.

This process was driven by two factors: the school district's desire to have greater control over candidate placement and the university's desire to ensure that candidates were placed in environments where they would be able to observe and implement specific types of high-quality instructional strategies. The district wanted to increase the level of clearance completed by candidates prior to their fieldwork, so an application and clearance process was jointly created by the CSU Long Beach College of Education and the district's human resources and professional development departments. Teacher candidates who wish to complete Clinical 1, 2 and 3 fieldwork must first be fingerprinted at the district at no cost and submit an application that identifies which courses they are enrolled in that semester. The district verifies the clearance and places candidates in schools according to the courses they are taking. The district uses a university-provided matrix of key course objectives and fieldwork requirements to ensure that candidates are placed in classrooms that will allow the specific fieldwork requirements to be met.

As a result of this process, we have seen increased communication between our educator preparation programs and our partner districts. We now have a large network of cooperating teachers to mentor our teacher candidates, whose preparation is enhanced by these purposeful placements.

Linked Clinical 1 and 2 Fieldwork

An additional goal of eliminating the self-placement process was to allow teacher candidates to complete their Clinical 2 Fieldwork in the same classroom where they would be assigned for one of their two Clinical 3 assignments. This change was prompted by the desire to increase the "residential feel" of fieldwork requirements within the traditional multiple subject credential pathway. The idea was that candidates would complete between 20 and 50 hours in one classroom the semester before student teaching. If the placement appeared to be a good fit, from both the perspective of the candidate and the master teacher, the candidate would then complete one of their student teaching placements in that classroom. The program wanted to provide candidates with the opportunity to develop a relationship with the school, classroom and teacher before student teaching so that they would better understand the culture, climate, protocols and teaching style of the classroom. The hope was that these teacher candidates would be ahead of the steep learning curve that normally marks the beginning of student teaching.

To pilot this idea, the school district and the university jointly identified "anchor schools" with the intention of placing six to 10 students at a given school site. Master teachers and teacher candidates were recruited for participation in this aligned Clinical 2 to Clinical 3 placement. Anchor schools were primarily identified by the district superintendent; schools were chosen based on their demographics, desire and willingness to host student teachers, stability of teaching and administrative staff, teacher expertise (as indicated by, for example, a high number of teachers who had earned National Board Certification) and evidence of closing the achievement gap for students of color and other underrepresented student populations. Anchor schools committed to the partnership by agreeing to host both Clinical 2 and Clinical 3 students, participate in master teacher training events and focus groups and host onsite professional development provided by master teachers.

There were many benefits to teacher candidates in this aligned Clinical 2 to Clinical 3 placement. First, students were able to see the entirety of a school year, with some students beginning in the fall with Clinical 2 and then student teaching in the spring of the following year, and other students beginning in the spring with Clinical 2 and returning to that classroom the following school year for student teaching. Second, student teachers and master teachers developed working relationships

with each other prior to the beginning of the student teaching experience, which provided for a more efficient start-up in the student teaching semester. Additionally, each student teacher had more time in one school and classroom setting to learn about the students, the culture, policies, procedures and teaching style of the master teacher.

There were also drawbacks to the aligned Clinical 2 to Clinical 3 placements. Due to the district's extensive clearance process, it was sometimes difficult to recruit and place students within a reasonable timeframe to complete all assignments in the Clinical 2 semester. Teacher candidates would commit to participate in this program; however, to expedite the completion of the requirements, they would later decide to self-place in another district. In addition, some candidates completed their Clinical 2 rotation but decided not to stay in that placement for Clinical 3, which left master teachers feeling that they had invested time getting to know the student and providing learning opportunities, only to have the candidate move placements. Additionally, following a Clinical 2 placement, some master teachers and teacher candidates shared concerns about personality conflicts and asked to not continue in that partnership arrangement. Finally, having one classroom environment for both Clinical 2 and 3 placements limited the candidate's exposure to alternative grade levels, student demographics, school cultures and teaching styles.

Ultimately, the partnership determined that the linked Clinical 2 and 3 experience was very challenging to implement, and it was not a practice that we have chosen to continue on a large scale. The partnership has and will continue the practice of strategic placements for all phases of fieldwork within Long Beach Unified School District (Clinical 1, 2 and 3). While self-placement for Clinical 1 and 2 is still available for teacher candidates outside of this district, the placement of students within Long Beach Unified will continue to be supported by the university's Office of Clinical Practice and the district's Professional Development Center. The school district has committed ongoing resources for two positions within their Professional Development Center that support the placement of students for all three fieldwork phases and does not charge teacher candidates for the additional fingerprinting and application procedures required by the district.

While Clinical 3 (student teacher) placement has always been a strategic partnership effort among the more than 25 school districts that partner with the Multiple Subject Credential and Urban Dual Credential programs, elements of our work with Long Beach Unified School District was extended into other districts. During the final two years of the grant, we expanded the anchor school concept to partner school districts outside of LBUSD, including the Los Angeles Unified School District, Santa Ana Unified School District, Magnolia School District and Ocean View School District. The Urban Dual Credential Program expanded into Garden Grove Unified School District, in addition to their partnership with the Little Lake School District. This expansion has required more communication and in-depth partnership work with these districts. Recently, a meeting was held that included many of our non-LBUSD district partners to discuss Clinical 3 placements in more detail and to seek their feedback on the policies and procedures on this challenging process.

Key District Personnel on Loan to the University

A very significant aspect of the NGEI work was the loan of two program specialists from Long Beach Unified School District to engage and extend our partnership work in the NGEI reform efforts. Supplement [2.5 Long Beach Job Descriptions](#) shows the roles each of these district partners played in the NGEI reform efforts. These individuals were both "on loan" from the district from the duration of the grant and served as key district liaisons in the recruitment of network teachers and anchor schools, serving as student teacher supervisors, methods course instructors, supporting methods course revisions and participants in our College of Education strategic planning.

Specifically, the Clinical Supervision Coordinator position has focused on recruitment of anchor schools and network teachers, development and implementation of a Student Teacher Bootcamp and supervision of teacher candidates and implementation of the newly developed student teacher observation tool. The Induction and Program Graduate Effectiveness Coordinator engaged in similar activities as the Clinical Supervision Coordinator, with the added responsibility of conducting program evaluation with an extensive case study of program graduates. In addition, this individual developed online student modules that oriented Clinical 1 and 2 students to the requirements and responsibilities of their fieldwork obligations.

The inclusion of these positions has been integral to our implementation of the NGEI grant. Since both were housed on the university campus, there was the opportunity for daily collaboration in the creation of new curriculum and first-hand experience with the student teacher supervision process. These individuals were able to create long-standing partnerships with district schools in their role as university supervisors, which resulted in a great deal of trust between the partners. The development and implementation of the student teacher observation and evaluation tool was grounded in what beginning teachers need to know and be able to do to be successful. The input from these individuals was key, as they both had significant professional experience working with both new and veteran teachers. Both were well-respected on the university campus for their expertise and have been included on several committees and workgroups for the development and implementation of new curriculum.

Scaling and Sustaining

It is the intention of CSULB and our partner districts to sustain many aspects of KTE 1. The clearance and placement process developed by our partnership will continue. The superintendent of LBUSD committed to continue the funding of the placement coordinators in the LBUSD Professional Development Center. Additionally, the district will continue to provide fingerprinting at no charge for teacher candidates. While the two district employees on loan to the university will return to the school district for the 2019–2020 academic year, the superintendent has agreed to allow them time away from their teaching responsibilities to support the university's Student Teacher Bootcamp in the fall and spring semesters.

CSU Long Beach will continue to work with additional partner districts to sustain and expand the clinical practice placement model that was begun during the NGEI work. A faculty member has recently been selected to work as a liaison between the university and our multiple school district partners through the university's Office of Clinical Practice. In an effort to scale up the successful intentional placement model, the Clinical Practice Coordinator will work closely with the initial credential programs and advanced programs to support the recruitment, selection and training of master teachers and anchor schools. These efforts will ensure that intentional, high quality clinical placements continue to be a priority into the future.

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3. IDENTIFYING PRIORITIZED SKILLS FOR EDUCATORS

KTE 2 Prioritized Skills: Identify, in partnership, the key skills, knowledge, and dispositions (“prioritized skills”) of a well-prepared new teacher. Ensure that this set of prioritized skills is aligned to the requirements of the Common Core and Next Generation Science Standards. Select an appropriate rubric to measure progress toward these prioritized skills. Where appropriate, demonstrate alignment with Teacher Performance Expectations and district identified teaching effectiveness frameworks.

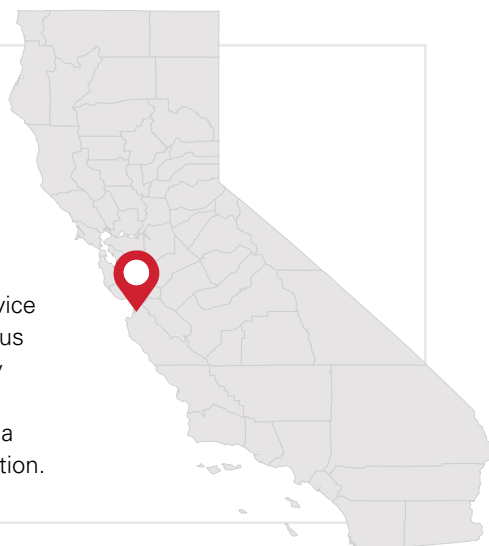
Goal: By 2018–2019 school year, teachers prepared in partnership program are required to demonstrate competency with prioritized skills. These skills will be determined in partnership and drawn from the TPEs AND an instructional rubric, e.g., Danielson framework, TAP rubric, the district’s own rubric or a different approved rubric.

Each NGEI partnership chose a set of prioritized skills that defined the key skills, knowledge and dispositions of a well-prepared new teacher. Partnerships then chose or developed a rubric to measure candidate progress toward these prioritized skills. In this chapter, two partnerships—California State University, Monterey Bay and California State University, Chico—share reflections about how prioritized skills became a central focus and a unified vision in shaping teacher preparation in their respective programs.



California State University, Monterey Bay

CSU Monterey Bay, a school of approximately 7000 students, is located near the central California coast in Seaside, CA. Approximately 180–200 candidates each year finish credential programs at CSUMB. The work of CSU Monterey Bay and its partner Monterey Peninsula Unified School District focused on prioritized skills around math and science instruction for pre-service teachers and their mentors. These prioritized skills were the focus in the creation of a STEM focused observational rubric, and they became central to teacher education throughout the credential program and the partner district. With prioritized skills providing a unified vision, three schools served as models for STEM instruction.



REFLECTION: Megan J. Sulsberger and Corin Slown, CSU Monterey Bay

CREATION OF A STEM-FOCUSED RUBRIC

Identifying prioritized skills for teachers that aligned to K–12 standards is a significant factor in supporting effective teacher practice. With the support of NGEI funding, CSU Monterey Bay and Monterey Peninsula Unified School District (MPUSD) partnered to create a rubric that aligned with teaching in science, technology, engineering and math (STEM). The goal in creating the rubric was to provide pre-service teachers with a non-evaluative tool to assist them in identifying strong STEM teaching methods and honing their practices as STEM educators. An added benefit of developing this tool was an opportunity to support cooperating teachers and clinical coaches as they, too, added to their repertoire of STEM teaching practices and mentored new teachers.

Our partnership worked together to build this rubric, shown in supplement [3.1 Monterey Bay STEM Rubric](#). The tool and its accompanying training materials were developed in partnership using direct language from state standards for teachers (the [California Standards for the Teaching Profession](#) [CSTPs] and the [California Teaching Performance Expectations](#) [TPEs]) and concepts and/or structures from additional tools (Center for Educational Leadership 5D+ Teacher Evaluation Rubric, the Charlotte Danielson Framework for Teaching, the STEM Education Quality Framework, the Fresno Region Common Rubric and the California State University STEM/CSTP Teaching Rubric). We chose the California Teacher Performance Expectations (TPEs) that were most related to effective STEM instruction and built rubric categories based on their overlap. It was our hope that the rubric's emphasis on current California math and science content standards for students would inform the design of professional development for all members of the teacher preparation process, including clinical coaches, pre-service teachers, cooperating teachers and district/university personnel. Furthermore, data collected from this rubric could guide the STEM training and support offered to teacher candidates in their coursework and in the field.

The final version of this rubric differed from the original version. Initially, we aligned the rubric to pre-service standards (TPEs), but we did not align it with standards for in-service teachers (CSTPs). We quickly realized that current in-service teachers collaborating with candidates as co-teachers and mentors in the classroom utilized a different set of standards. By cross-walking the STEM Rubric to include standards for pre- and in-service teachers, the rubric was able to meet the needs of the university and the school district. It provided a common language for all teachers to use when reflecting upon and developing teaching practice. The integrated tool captured the learning-to-teach continuum, with an intentional focus on STEM prioritized skills.

STEM-Specific Micro-moves

We supplemented our rubric with the development of a list of STEM-specific micro-moves, the fundamental teaching behaviors for instruction in STEM content areas ([3.2 Monterey Bay STEM Micro-Moves](#)). To develop this list, we deepened our understanding of the prioritized skills and identified grain-sized, coachable practices within our STEM Rubric. We focused on teaching micro-moves that, when used consistently, would support all students' equitable access to STEM. These micro-moves were important to both STEM learning and STEM teaching. This list was vetted with clinical coaches to determine if any changes or revisions were needed.

This decomposition of STEM prioritized skills made the skills more understandable for candidates and increased the likelihood of successful practice and implementation. Further, by highlighting the micro-moves and emphasizing the decomposition of STEM prioritized skills, faculty were able to choose and integrate these skills into student experiences. For example, in science and math methods courses, course assignments were rewritten to support understanding and application of prioritized skills and the STEM rubric tool.

We saw the inclusion and use of micro-moves as a strategy toward ensuring that all teachers were empowered to make thoughtful, informed decisions toward supporting all students' STEM learning and development. As the skills incorporated within the STEM Rubric were complex and layered, breaking the skills into smaller actionable moves allowed the candidates to practice and understand the ways in which their choices as STEM teachers were directly tied to equity and access. Utilizing the micro-moves resource, candidates began to understand the complexity of the STEM rubric and STEM instruction, thus realizing that STEM teaching is more than a methodology. Candidates analyzed the complex intersections between STEM learning, curriculum, instructional strategies and their students' unique cultures and abilities. This empowered candidates to plan, implement and assess student STEM learning in more equitable ways.

STEM-Focused Schools

During our NGEI work, three sites worked closely with university faculty to become STEM-Focused Schools where pre-service teachers could participate in an integrated teaching and learning experience built around the STEM prioritized skills. Additional district sites also integrated these practices in specific classrooms, which became bright spots for STEM instruction. At some sites, leadership designated instructional minutes for integrated STEM teaching, and pre-service candidates had multiple opportunities to practice STEM lessons with students. For both formal and informal observations, pre-service candidates honed their pedagogy and planning with coherent feedback from university faculty, their mentor teachers and clinical coaches. A district STEM teacher on special assignment (TOSA) was an additional source of expertise. Opportunities for candidates to practice in these contexts became a mechanism to transfer the prioritized skills and micro-moves into student experience.

At two of the STEM-focused sites, candidates also had additional practice with STEM instruction by participating in afterschool STEM instruction, or a STEM Lab School project, as a part of their science methods coursework. The STEM Lab School project was designed to provide candidates with opportunities to practice co-planning and co-teaching STEM lessons to students in a school setting during the methods class period. Developed in partnership with the partner district, this experience involved collaboration with administrators and after-school program personnel. Positioned within four nights of the methods class (one night beforehand for co-planning with materials, two nights for teaching and one night afterwards for debrief and data analysis), it also required purchasing of an NGSS-aligned curriculum and training candidates in its use.

In the planning and preparation phase of this project, candidates co-planned for the STEM content to be taught during their sessions. During the implementation phase, candidates created an effective and engaging STEM experience for students that covered the assigned content. Designated teacher(s) took the lead during the assigned STEM lesson, with the other teacher(s) providing support within the co-teaching model. Groups ensured that all materials and teachers were present for each STEM teaching experience and that the STEM lesson was successfully taught to students within the time period provided.

During the planning period and following teaching nights the clinical coaches, cooperating teachers and district personnel utilized and leveraged training around STEM prioritized skills to enhance planning and instruction. During the teaching itself, feedback would be offered related to the STEM rubric and micro-moves. This in-the-moment feedback by coaches, faculty and district representatives consisted of coaching or jumping into lessons to suggest new strategies.

Training on Prioritized Skills

The shared training on STEM prioritized skills and the standardization of the STEM coaching process contributed to a cultural shift in pre-service teacher STEM preparation. This work provided an innovative network of support and communication to develop prioritized skills in teacher preparation for pre-service candidates between university faculty, clinical coaches, cooperating teachers, pre-service teacher candidates and administration. Through these efforts, we created a learning community that both promoted the sharing of best practices and innovation and that deepened the impact of STEM programs on students' future academic and career choices.

Candidates' experiences with the STEM prioritized skills spanned both the coursework and the fieldwork. The foundation for developing pre-service teachers' inquiry approaches to teaching STEM were evidence-based practices. Class assignments related to the project and the prioritized skills provided candidates with practice with the various tenets of STEM. A STEM prioritized skill rubric observation assignment allowed candidates to translate what they had learned about STEM teaching and the STEM rubric into an actual observation and coaching opportunity in STEM. Professional development with teacher candidates incorporated training in planning and curriculum as well as pedagogy. The yearlong placement in the partner district provided candidates in the partnership with additional active learning experiences to apply the STEM prioritized skills in a practice setting.

Clinical coaches participated in a number of hands-on, professional development opportunities focused on the STEM prioritized skills. These included STEM rubric training and calibration sessions, STEM coaching and teacher observations in the field, professional development on content standards, curriculum trainings, rubric trainings for candidates, STEM academies and focus groups. Importantly, the clinical coaches emphasized providing teachers with support to identify goals and implement action steps delivered during feedback meetings. Clinical coaches focused on the delivery of clear, timely and useful feedback aligned to the STEM prioritized skills, including feedback that identified areas for growth and guided professional development. Accurately assigning indicators or standards of high-quality STEM teaching clarified for candidates how the observer understood the evidence. Clinical coaches could then help candidates set goals and identify next steps, including professional growth activities that supported agreed-upon descriptors of high-quality teaching and learning.

Professional development for district mentors included directive and cognitive coaching sessions. Through the use of candidate video, cooperating teachers were able to deconstruct practices and practice providing feedback to candidates. In addition, the cooperating teachers were able to identify specific strategies to engage candidates. Sentence frames and structures for providing feedback equipped mentor teachers to utilize the STEM rubric and observation consistently with all candidates. They provided praise, narrating the positive elements from their observation. Mentors then inquired, asking questions around a target from the STEM Rubric, and provided additional scaffolding as needed based on their observations. They used questions to lead candidates to action steps or revisions to their STEM lesson plans, pedagogy or activities. Finally, mentors worked with candidates to plan the implementation of these next steps.

Particularly for administrators involved in the project, our efforts to deepen core leadership competencies translated to principals' ability to attract and retain high-quality STEM teachers. Administrators received training to augment their STEM prioritized skills, as well as support with setting structures for teachers to plan integrated, year-long units as a collaborative school team. Leaders also learned to support teachers to act as facilitators in guiding student learning through inquiry and support structures for teachers, including common planning time within the school day to support data-driven cross-curricular collaboration and professional learning in NGSS and CCSS-M. Leaders used the STEM teaching rubric to provide a high-quality observation and feedback cycle

to improve teacher growth in STEM instruction. Deepening learning for all students is achieved through cultivating leaders at all levels of the system who are committed to creating a culture of collaboration, shared ownership and a focus on continuous improvement of STEM instruction.

Scaling and Sustaining

Over the past three years, we have implemented integrated district systems for STEM instruction and training that will continue beyond the cessation of the grant funding within the university and district partnership. CSUMB and MPUSD's collaborative efforts around developing competency with STEM prioritized skills will continue to include:

- The utilization and calibration of the STEM rubric, developed with CSUMB, in all classrooms.
- Training for all pre-service teachers in the STEM rubric and STEM prioritized skills, including integrated course assignments, professional development and during and after school STEM teaching opportunities.
- Mentor teacher training and support to teach lessons with MPUSD approved STEM curriculum and to provide necessary feedback to STEM novices.
- Training and support for clinical coaches to provide feedback on Next Generation Science Standards (NGSS) and Common Core State Standards for Mathematics (CCSS-M) teaching practices based on developed prioritized skills.
- Cultivation of STEM learning and excellence through investment in the three STEM sites, including support around the STEM prioritized skills for STEM teacher leaders and administration at those sites.
- Coaching for and investment in all stakeholders by project leadership.

As we scale this project and shift leadership to the teachers who have been involved for the past three years, we build continual capacity with a district STEM leadership team. The STEM leads who are currently working at the three dedicated STEM schools have expanded their work to identify best practices in STEM and have shared this work with others at their sites and within the district. STEM leads will support teacher implementation of STEM curriculum and instruction aligned to the NGSS and the CCSS-M. They will also provide and support relevant and timely professional development for pre-service teachers, co-teaching mentor teachers and district leaders. The STEM leads will continue to work closely with CSUMB faculty to ensure content alignment and leverage CSUMB resources.

In summary, the work of this partnership will continue to provide an innovative network of support and communications to develop prioritized skills in teacher preparation for pre-service candidates between university faculty, clinical coaches, cooperating teachers, pre-service teacher candidates and administration. We will continue to create a learning community that promotes the sharing of best practices and innovation to deepen the impact of STEM programs on students' future academic and career choices.

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Cresta McIntosh, Monterey Peninsula Unified School District

Rod Garcia, Monterey Peninsula Unified School District

California State University, Chico

CSU Chico is located in the Sierra Foothills, 75 miles north of Sacramento. With a student population of over 17,000 students, the university recommends approximately 280 candidates for a teaching credential each year. For its NGEI project, CSU Chico partnered with Chico Unified School District on a project to provide support for new and veteran teachers in implementing the Next Generation Science Standards (NGSS).



REFLECTION: Mimi Miller and Al Schademan, CSU Chico

Prioritized Skills

At the start of the grant, both the campus and the district identified a need for new and veteran teachers to gain experience with NGSS implementation. In 2016, there were no state-approved, NGSS-aligned materials for district adoption. While some teachers in the district had sought and gained expertise in the NGSS, district administrators knew that practicing teachers would benefit from in-depth professional development that would translate directly to classroom practice. At CSU Chico, teacher educators had made efforts to introduce candidates to NGSS in coursework, however, candidates across programs requested more opportunities to practice this instruction in their clinical placements. This jointly-identified need led to a synergy in problem solving from both the district and campus. The Triad leadership team, composed of district and campus leadership, moved forward with a defined purpose and vision.

Our five prioritized skills, aligned to California Teaching Performance Expectations, included:

1. Design and implement rigorous, science and math focused integrated instructional units that meet a variety of California state standards.
2. Engage students in learning by connecting subject matter to real-life contexts and providing hands-on experiences.
3. Provide access to the curriculum for a wide range of learners, including those with special needs and emergent bilinguals, using a variety of instructional strategies.
4. Design and administer classroom assessments, including the use of scoring rubrics, to gather evidence of the teacher's impact on student learning and adjust instruction.
5. Collaborate and communicate effectively and appropriately with peers and colleagues to support teacher and student learning.

The creation and instruction of Triad units—a collaboration between candidates, their cooperating teachers and university science content specialists—was the nexus of this change, and it drove professional development and learning. With prioritized skills in mind, the partnership was able to enact a system that impacted how science was taught and learned in the university's teacher preparation program and in the public schools. The process is described in supplement [3.3 Chico Triad Participant Guide](#).

The activity of constructing the units was at the center of the Triad model, and this concrete activity helped to give all Triad members a joint space in which to engage in professional development. Approximately 15 Multiple Subject Credential Program candidates each semester (all in the first semester of their 10-week student teaching practicum), were placed with district teachers who applied and were selected jointly by the Triad leadership team. An additional one or two candidates who were in middle school placements in the Single Subject Credential Program also participated. The partnership resulted in careful selection of cooperating teachers who would be capable of engaging in the Triad while also mentoring candidates through program requirements (co-planning, co-teaching, observation and feedback). In addition, Triad leadership matched each candidate/cooperating teacher with a science content specialist, mostly university professors who had expertise in NGSS and/or extensive content area knowledge in a discipline of science or engineering.

The district and campus worked together to provide 4.5 hours of NGSS preparation for practicing teachers, teacher candidates and content specialists; those sessions were open for all teachers in the district, and attendance ranged from 30–45 per semester for six semesters. At the NGSS professional development workshops and in science methods coursework, Triad participants were taught to use the Triad Unit Planning Tool as a scaffolding device to build the unit ([3.4 Chico Unit Planning Tool](#)). This planning tool, following backward design concepts, provided a structured template for unit construction along with embedded hyperlinks to resources that defined terms and provided explanations of innovative methods. Over the course of a semester, each Triad team met several times after school and developed a unit aligned with grade level standards. A materials stipend of \$500 was allotted for Triads to purchase materials that supported instruction. At the end of the semester, the candidate and the cooperating teacher (and often the content specialist) co-taught the unit of five to 10 lessons in the clinical placement classroom. The following semester, a new set of candidates were admitted and new Triads were established, sometimes with cooperating teachers and/or content specialists who had formerly been part of a Triad, and the process began again.

During the three-year grant, 62 Triad units, all available at the [Triad website](#) were produced by teams of candidates, cooperating teachers and content specialists. The learning process behind these products was significant. Each semester, Triads engaged in a series of NGSS workshops (90 minutes per week for three weeks, 4.5 hours total) in which they learned about standards and resources, practiced NGSS pedagogical methods (i.e., model-based instruction and argument-driven inquiry) that aligned with the grant's prioritized skills and used a planning tool to develop lessons that were taught by unit creators in their classrooms. The planning tool aligned with prioritized skills. For example, units were required to include the three dimensions of an NGSS standard. In addition to these workshops, candidates' learning was enhanced by a 10-week science methods course that supported planning and pedagogical strategies for building the Triad units. The course supported prioritized skills, such as how to use authentic forms of performance-based assessment as part of the learning process.

Our team knew that substantial learning occurred because SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) goal benchmarks were met. Data showed that candidates effectively developed and taught NGSS-aligned units that supported students in three-dimensional learning to make sense of phenomena or design solutions. Furthermore, self-assessment of learning was high. For example, in the Triad Reflective Survey, 95% of 117 Triad members surveyed agreed (34%) or strongly agreed (61%) that the Triad Project helped them translate NGSS into instructional practice. These data were analyzed, explored and presented in multiple forums, including learning sprint webinars, grant convenings, partnership meetings and state/regional/national conferences.

In the Triad Reflective Survey, 95% of 117 Triad members surveyed agreed (34%) or strongly agreed (61%) that the Triad Project helped them translate NGSS into instructional practice.

Adoption of the CORE Rubric

Another component of this KTE was the adoption of the Chico Observational Rubric for Educators (CORE) ([3.5 Chico CORE Rubric](#)). By year two of the grant, this rubric was adapted and adopted for use as an observational rubric across all programs in the School of Education. The CORE rubric, adapted from the [TNTP](#) Core Rubric, was adopted because it aligned with current standards and Triad's prioritized skills. The rubric was unique in that it focused on student engagement in learning and highlighted students' academic ownership as an essential outcome of effective teaching. This rubric became a tool to further define and measure the teacher candidates' progress toward developing prioritized skills. As candidates taught their Triad units, trained university supervisors observed and gave feedback using the CORE rubric.

The CORE rubric is now used across programs in the School of Education for six observations each semester conducted by supervisors who have been trained to use the rubric. Initially, training was provided by TNTP, but as the grant progressed our faculty began leading the training and calibration sessions, providing support for both new and experienced users. Rubric training serves to continually reinforce prioritized skills. While the rubric was not adopted as an evaluation tool within the district, it has been approved as an alternative tool that can be used during peer evaluations, and some teachers have chosen to use it during their post-tenure reviews.

Academic Ownership: Making Thinking Visible

During the grant, after a presentation by [TeachingWorks](#), we were encouraged to take our list of prioritized skills and drill down into more focused teaching skills. One that we identified as essential in NGSS instruction was the idea of "making thinking visible." Teachers can help their students make thinking visible by having them answer productive questions, draw models of scientific phenomena or write an argument using evidence. During years two and three of the grant, in coursework and fieldwork, candidates were explicitly coached in these practices. With their mentors, at NGSS workshops, they experienced phenomena and then practiced asking and answering questions that encouraged student thinking without doing the thinking for them.

We saw evidence of this prioritized skill in student work collected from Triad classrooms, which suggests that it impacted both instruction and learning. Student work samples contained in final, published units show evidence of students making their thinking visible in models, presentations, writing and various other forms. In the supplement [3.6 Chico Student Work Samples](#), Sample A shows a second grader's claim about a chemical change (melting butter) witnessed at a station in class. Sample B shows a written argument made at the end of this second-grade unit. In a fifth-grade unit, students actively learned about what plants need to survive. Sample C shows a representational model and a written argument, complete with claims, evidence and reasoning. Triads who created the units purposefully provided opportunities for students to make their thinking visible while engaging in NGSS-aligned learning. Such examples were common across most Triad units, across grades, as represented in age and developmentally appropriate ways by students.

Scaling and Sustaining

The Triad units have helped NGSS become integrated into methods courses across programs in the School of Education. In year three of the grant, candidates in the Multiple Subject Program who were part of the Triad Project built and taught units with cooperating teachers and content specialists, just as their Triad counterparts had done in previous semesters. Additionally, during year three, two other groups of students participated in a modified Triad model. A second group of candidates who were placed in another district were invited, with their mentors, to participate in NGSS training. They were allotted a budget to co-plan and co-teach an NGSS unit, using the Triad planning tool. A third group of candidates in the Multiple Subject Program, placed in multiple districts, selected pre-existing Triad units to revise and co-teach with their cooperating teachers. All three of these groups were guided by their science methods course instructors; the biggest difference between the three was the level of extra support and guidance.

We studied this idea for scaling as part of our process of continuous improvement. This study enabled us to understand potential differences in the experiences of candidates who received varying levels of support from and engagement with the Triad system. While results indicated differences between the groups, we also learned that with some adjustments to the unit assignment in class, and support to teaching the unit in clinical placements, the idea to adapt and use already existing units was a promising path toward sustaining practices after the grant.

Beyond the grant, the implementation of units will serve as a key assessment for the science methods course in the Multiple Subject Program. This use of existing Triad units strengthens the connection between what candidates learn on campus and what they are practicing in the classroom; prioritized skills taught in methods courses are practiced in clinical placements. Even candidates who have not “built” a unit have the experience of adapting a pre-existing NGSS-aligned unit and co-teaching it with their cooperating teacher. All candidates receive formative feedback on their units in the science methods course. In their clinical placements, they receive observational feedback from cooperating teachers and university supervisors, who use the CORE rubric to guide candidates toward their mastery of prioritized skills.

The CORE rubric will remain as the observational/feedback tool for all candidates across programs in the School of Education. It has been integrated into the processes and practices of the School of Education as a component of the assessment system, with full support of faculty, administrators, staff and stakeholders.

The author would like to thank the following individuals for their contributions to the NGEI work:

Christi Bangsund, Chico Unified School District

Rachael Beyers, CSU Chico

Joanne Parsley, Chico Unified School District

Tal Slemrod, CSU Chico

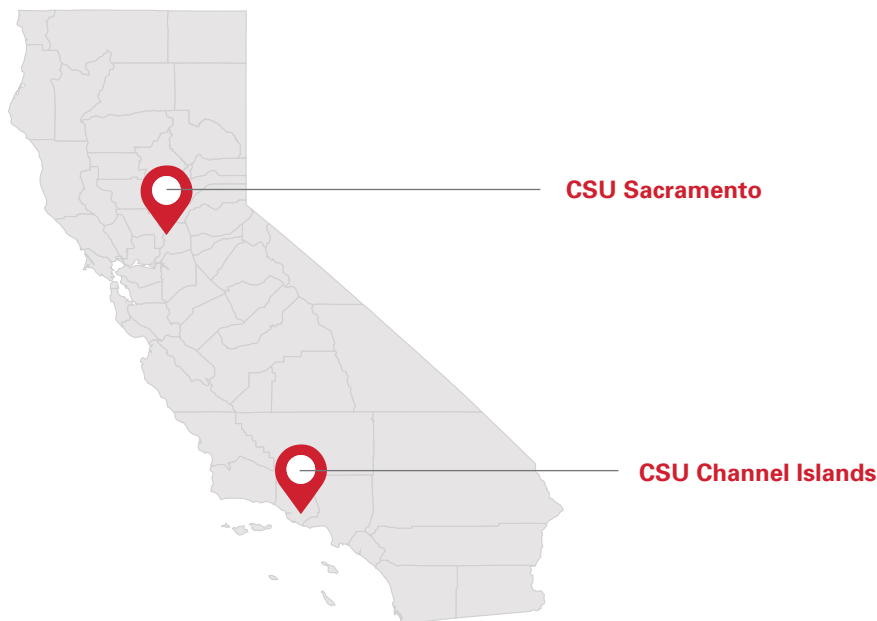
Ted Sullivan, Chico Unified School District

4. DESIGNING PRACTICE-BASED TEACHER PREPARATION

KTE 3 Practice-Based Clinical Preparation: Build and refine opportunities for candidates to gain fluency with prioritized skills during clinical preparation.

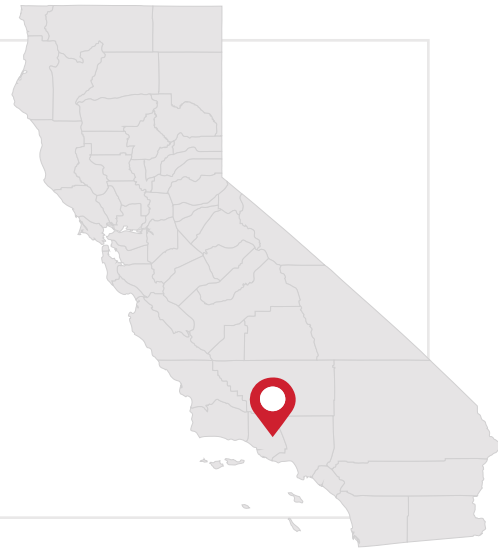
Goal: By 2018–2019 school year, teacher candidates prepared in partnership programs are placed in clinical settings explicitly designed to allow them to build facility with prioritized skills. Ideally, these clinical settings include well designed co-teaching opportunities that span a full school year. Clinical experiences include multiple opportunities to demonstrate competency with prioritized skills.

KTE 3 required that projects consider ways for candidates to practice and gain fluency with prioritized skills. Projects responded by designing ways to align their university methods coursework with clinical practice in field placements. Both CSU Channel Islands and CSU Sacramento strengthened elements of teacher preparation by creating an experience for candidates in which both coursework and clinical practice focused on their projects' prioritized skills.



California State University, Channel Islands

CSU Channel Islands, with a student population of 6,700 is located in Camarillo, CA, midway between Los Angeles and Santa Barbara. Each year credential programs at CSUCI recommend approximately 100 candidates for California teaching credentials. Faculty at CSU Channel Islands partnered with Pleasant Valley School District to transform teacher preparation in ways that met the needs of both partners. Their partnership focused on aligning coursework and clinical experiences to give their teaching candidates excellent preparation in the areas of differentiated instruction, math and science.



REFLECTION:

Michelle Dean, Kara Naidoo and Carolee Hurtado, CSU Channel Islands

Annie Ransom, Pleasant Valley School District

The CSU Channel Islands School of Education is dedicated to expanding our community partnerships and cultivating a network of invested stakeholders with a shared interest in developing the next generation of teachers. With the support of grant funding, our work focused on supporting districts by identifying areas of need in the community and developing a teacher preparation program to address these needs. Through our NGEI work, we sought to build a new generation of teacher candidates who had a strong foundation in differentiated instruction and math and science methods.

NGSS Professional Development

When the grant began, NGSS was a new way of teaching and learning science for in-service teachers, teacher candidates and teacher educators. This created an opportunity for all stakeholders to learn and develop together in their NGSS readiness and beliefs about the effectiveness of their science teaching. In their methods courses, teacher candidates were charged with designing and implementing a NGSS-based 5E learning sequence in their student teaching classroom with the support of their cooperating teachers. The 5E model of instruction (engage, explore, explain, elaborate, evaluate) is a way to organize learning that allows learners to first become interested in and ask questions about the content (engage and explore). Next, teachers introduce vocabulary, concepts and main ideas (explain). The students are then expected to apply and use their new knowledge and try out their understanding of the content (elaborate) and are assessed on their mastery of the content (evaluate).

During professional development workshops, teacher candidates and their cooperating teachers participated in an exemplar NGSS-based 5E learning sequence and then planned together for the NGSS-5E learning sequence that was to be implemented in their classrooms. The professional development workshops began with an explanation of the conceptual shifts of NGSS, the reasoning behind the 5E model and the important role of phenomena in NGSS instruction. The rest of the day was spent participating in a sample 5E NGSS learning sequence. The learning sequence was broken into segments, and teacher candidates and mentor teachers had time to plan after each segment. For example, the “engage” portion of the 5E model would be completed from the sample lesson as

a group, then teacher pairs had time to plan how they would use phenomena to engage students. Then “explore” and “explain” cycles would be demonstrated, followed by planning time, and so on. The resulting instructional units were similar to the one shown in Supplement [4.1 Channel Islands Sample Unit Plan](#).

This experience made it easier to connect what happens during methods courses to teacher candidates’ clinical experiences. Cooperating teachers were able to understand the expectations of the coursework while also improving their science content knowledge and pedagogy. University faculty were better able to support pre-service and in-service teacher development; they could support the implementation of NGSS three-dimensional learning sequences in classrooms.

A mixed methods design was used to capture the transformations in teacher candidates’ and cooperating teachers’ NGSS readiness and science teaching self-efficacy. In the context of science education, self-efficacy beliefs are composed of what individuals think they can do as science teachers (i.e., their Personal Science Teaching Efficacy or PSTE) and their beliefs about the expected outcomes of their actions as science teachers (i.e., Science Teaching Outcome Expectancy or STOE). The Science Teaching Efficacy Behavior Instrument (STEBI), which measures both factors, was administered to teacher candidates and their cooperating teachers at the beginning and end of two 16-week semesters during the 2018–2019 school year. In addition to surveys, data were collected from two class assignments completed by teacher candidates, a pre-post science autobiography and a reflection about the implementation of the NGSS learning sequence.

Results indicated that participants in the NGSS intervention felt more confident in their ability to teach a science lesson. Interaction effects indicated that single subject teachers felt more confident than multiple subject teachers. In terms of Science Teaching Outcome Expectancy, all participants felt more confident that their science teaching could positively influence student learning. Interaction effects indicated that multiple subject and single subject participants had higher scores than cooperating teachers. Supplement [4.2 Channel Islands NGSS Intervention](#) gives a detailed analysis of results. Overall, findings indicate that the NGSS-5E intervention was an effective professional development for teacher candidates and cooperating teachers.

STEMposium

The STEMposium workshop was developed to provide STEM-focused (science, technology, engineering and math) professional opportunities for potential cooperating teachers in Ventura County. As described on the website vcstemposium.org, the CSU STEMposium program provided free professional development for K–12 teachers to help support them in implementing standards (the Next Generation Science Standards and California’s Standards for Environmental Principles and Concepts) and in integrating science and engineering instruction with math, language arts and technology. The program consisted of a week-long summer institute for K–12 teachers, followed by two optional Saturday workshops during the subsequent school year.

STEMposium focused on the most current teaching methods, standards and highly effective practices. The workshop also included training in soft skills that were needed to be successful in STEM, like growth mindset. As was discussed above, STEM professional development was essential for cooperating teachers, who tended to feel less confident in their ability to implement science lessons using the NGSS and 5E model methods. STEMposium was particularly relevant to partnerships and teacher preparation experiences, as CSU Channel Islands relies on teachers in local school districts to provide high quality placements. STEMposium participants had the opportunity to deepen their knowledge and practices around, as shown in the outcome data in [4.3 STEMposium Data Summary](#).

In the initial years of grant funding, the annual STEMposium was open to teachers from across Ventura County as well as teacher candidates. The 2018–2019 STEMposium hosted an average of 110 teachers for five days from 78 different school sites and 33 different school districts from Ventura County, San Luis Obispo County, LA County and San Bernardino County. Seventy-eight teachers registered in grades K–5, 27 teachers in grades 6 to 8 and nine teachers in grades 9 to 12. The attendance was significantly higher than in previous years due in large part to the participation of teachers from Los Angeles Unified School District (27) and a large showing of Rio School District

in Oxnard (20). Additionally, one student was associated with the credential program, involved as a teacher's assistant in the high school cohort and had been a teaching assistant at a past STEMposium. According to our initial survey (n=131), 30.5% of participants had attended a previous STEMposium or sometimes multiple STEMposiums before attending in 2018–2019. Through data collected before, during and after, we were able to assess various goals we set out to accomplish during this intensive professional development.

Common Core Standards for Mathematical Practice

The [Common Core Standards for Mathematical Practice \(SMPs\)](#) require K–12 students to engage in the mathematical habits of mind of a mathematician. Teachers (both in-service teachers and teacher candidates) must structure learning environments and learning goals, and approach lesson design differently to engage students in the SMPs. Goals of this work included: (a) supporting teacher candidates to develop a strong understanding of the SMPs in relation to Cognitively Guided Instruction (CGI) research and practice around children's mathematical thinking; (b) structuring opportunities for teacher candidates and cooperating teachers to plan, teach and/or co-teach instructional activities designed to engage students in the SMPs and reflect upon their implementation and student learning; and (c) deepening math content, practice and pedagogy around mathematics teaching and learning for teachers, pre-service teachers, students and their families.

We revised our math methods courses so that teacher candidates could experience instructional activities and mathematics lessons through multiple lenses: as a student, as an educator and as a community of educators. Throughout these experiences, math methods courses provided opportunities for teacher candidates to observe lessons facilitated by the methods instructor with third and fifth grade classrooms. Teacher candidates observed student thinking, and used these observations to design instructional activities that they lead with small groups of students from those classrooms.

Five teacher candidates in residency placements and their cooperating teachers hosted all teacher candidates in the math methods course for “lab day”, an all-day lab in public school classrooms with elementary students. Teacher candidates co-planned and co-facilitated mathematics lessons that included instructional activities and problem solving. Teams of candidates and mentors reflected on their lessons as they related to student thinking. Following the reflection activity, partners co-planned and co-facilitated a follow-up lesson based on their observations and reflections of student thinking. The co-planning, co-facilitation and co-reflection process allowed candidate-mentor teams to utilize in-the-moment decision-making as they considered the connections between their planning, pedagogy and implementation.

This work was a pilot to see what we could learn from math methods experiences that integrated the university classroom learning with interactive and collaborative teaching and learning with elementary students. Teacher candidates drew upon university learning and shared experiences with elementary math students to refine their vision for and approach to teaching and learning of mathematics. Lesson plans were substantially more developed and connected at the end of the second semester following these opportunities. Teacher candidates developed a set of norms and expectations for what academic engagement looks like in mathematics classrooms.

Teacher candidates regularly reported that they felt more prepared to teach mathematics. For some teacher candidates, teaching math was the biggest fear they had in becoming a teacher. Through their shared experiences, many developed self-confidence as mathematical thinkers, which in turn prompted them to consider how to create such opportunities for their students. In supplement [4.4 Channel Islands Candidate Reflection](#), a candidate gives a 700-word reflection about how the math methods course, in combination with targeted practice in a classroom setting, changed their perception of math teaching and learning. The spirit of the reflection is captured in this quote:

“Instead of math being something that I was dreading to teach to my students because even I didn’t understand what I was teaching, I was excited because I did understand and I was even learning new strategies with my students.”

Scaling and Sustaining

This NGSS professional development intervention has been scaled up to include surrounding school districts in which CSU Channel Islands has placed teacher candidates during their student teaching placements. We have led NGSS professional development throughout the region, including Santa Paula School District, Oxnard School District, Oceanview School District and Pleasant Valley School District. The goal of these NGSS professional development workshops is to increase potential cooperating teachers NGSS readiness and science teaching self-efficacy.

The science methods instructor has reached out to chemistry, physics and biology instructors who traditionally teach science content courses for teachers in hopes to more closely align undergraduate courses to the content, pedagogy and practices of the NGSS. Thus far the science methods instructor and a chemistry professor are working together to revamp the chemistry course.

STEMposium has established CSU Channel Islands and one of our partner schools, University Prep Charter School (UPCS), as leaders in STEM education. With NGEI funding, UPCS has been able to offer the week-long institute at no cost to participants. UPCS will continue to support STEMposium with facilities and release time and stipends for our teachers and university science faculty to act as presenters. Participants will be asked to pay a small fee to enroll in the institute which will cover basic costs associated with putting on the event. In addition to the annual STEMposium, school districts are requesting more personalized professional development opportunities. UPCS will continue to contract, on a fee for service basis, with districts to provide NGSS workshops and coaching that teach phenomena-based instruction utilizing the 5E model. The continued growth of quality science education in Ventura County will provide for better student teaching placements across the county and subsequently better future teachers. The underlying pedagogy being taught can be applied to all areas of teaching and increase student motivation and student success.

Our work with the Standards for Mathematical Practice has continued to deepen and grow. Four of the hosting teacher candidates from a previous “lab day” were hired to work as after school mathematics teachers at their placement sites. To build students’ confidence and skills in mathematics, they used math methods approaches, instructional activities and norms to design the class. These four teacher candidates also hosted the lab day for the next cohort of teacher candidates. They were able to clearly and confidently articulate their approach to mathematics teaching, decisions they make in planning and implementation of lessons, and how they use student thinking to inform next steps. We aim to connect with former math methods students, and to encourage these students to stay connected with the university. Moreover, it is our goal to ask former teacher candidates to host future lab days and classroom observations, and to encourage them to consider becoming a cooperating teacher. In addition, one of the local school districts is now embracing Cognitively Guided Instruction (CGI) professional development for many of its schools. CSU Channel Islands mathematics faculty were invited to present at the district principal meeting in September 2019 to begin this focus.

The authors would like to thank the following individuals for their contributions to the NGEI work:

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Sarah Cohen, National Center for Teacher Residencies

Manuel Correia, CSU Channel Islands

Talya Dresher, CSU Channel Islands

Charmon Evans, Pleasant Valley School District

Brian Sevier, CSU Channel Islands

California State University, Sacramento

CSU Sacramento, with a student population of 30,000 and approximately 300 credential finishers each year, is located near California's capital city. A focus of CSU Sacramento's partnership with Sacramento City Unified School District was to map prioritized skills onto the clinical experience and coursework. Their process included developing shared prioritized skills, integrating those skills in coursework and fieldwork, creating new data points and changing their data processes.



REFLECTION: Sue Baker and Pia Wong, CSU Sacramento

Our partnership with Sacramento City Unified School District has long functioned well, but the NGEI work allowed us to strive for a new level of coherence between the teacher preparation program and our partner district.

Prioritized Skills Profile

The notion of a shared, co-constructed profile of prioritized skills was a new challenge for our partnership that was undertaken with enthusiasm. The partners examined a range of different observation instruments and protocols, many of which were suggested by the NGEI leadership. At the same time, the district had been working intently on an observation protocol linked to the state standards in mathematics and language arts. The observation protocol focused on a targeted set of teacher moves that could build student engagement, content knowledge and academic language. Given that the district was already investing in this protocol our partnership opted to use the district's Prioritized Skills Profile (PSP) as its observation instrument (see [4.5 Sacramento Prioritized Skills Profile](#)). As initially designed by the district, the PSP articulated observable actions aligned to the state standards in language arts and mathematics. Through our partnership, we extended its application to science.

Because the PSP made explicit observable teaching behaviors, faculty were able to integrate these skills into course assignments and clinical experience observation protocols. The project director met regularly with coursework instructors, especially before the beginning of each semester, to discuss how the prioritized skills could be taught explicitly and assessed in the candidates' instructional methods courses. Discussions were generative, and faculty expressed enthusiasm for the heightened level of communication between them. As a result, the prioritized skills became visible in both coursework and fieldwork.

The prioritized skills also served as the backbone of our monthly professional development sessions with CSU Sacramento faculty, supervisors and district cooperating teachers. Professional development focused on calibration on the NGSS shifts, the prioritized skills and actionable feedback. Calibration data was collected at the end of year two, and it revealed differences between the stakeholder groups. University supervisors and faculty calibrated more closely than cooperating teachers. Anecdotal evidence during professional development sessions suggested that cooperating teachers were often focused on issues of classroom management and alternative "teaching moves" rather than on describing teacher behavior and using the rubric to identify actionable feedback. This is a learning that informed our professional development efforts.

Integrating Skills with Coursework and Fieldwork

In the second year of our three-year NGEI partnership, one of our faculty and a leader in our NGEI work became a [TeachingWorks](#) fellow. This work allowed her to study in depth the TeachingWorks high leverage practices and to integrate them into her coursework. During the following year, three more faculty members became TeachingWorks fellows, including the NGEI project director, and they attended multiple professional development convenings focused on integrating justice-focused, practice-based, teacher educator pedagogies and high leverage practices into coursework and fieldwork. As a result, during our third year our focus shifted from the original prioritized skills, as identified by our partner school district, to the high leverage practices supported by TeachingWorks. This switch was embraced by our district partners, as it allowed us to use the considerable support provided through TeachingWorks. We found the high leverage practices identified by TeachingWorks to be more intuitive than our original prioritized skills.

Over time, we revised a subset of TeachingWorks' high leverage practices for our own context (see [4.6 Sacramento High Leverage Practices Example](#)). Course instructors now use the TeachingWorks Learning Cycle (introduce, prepare, enact, analyze) to apply practice-based teacher educator pedagogies to the teaching of the high leverage practices. For each high leverage practice, teacher candidates move through stages in which they are first introduced to a practice through techniques such as modeling and decomposition of the skills. They prepare by practicing during peer run-throughs and rehearsals. After enacting the high leverage practice in the classroom, they analyze their practice and debrief. To help with the analysis and reflection of teaching, we use GoReact, a video annotation tool that allows candidates to capture their instruction and annotate their video to show their use of high leverage practices.

To guide our practice, we created a document that captures how high leverage practices are introduced, practiced and assessed through coursework and fieldwork. This document (see [4.7 Sacramento Curriculum and Fieldwork Overview](#)) will continue to be updated as we work with all stakeholders on integrating high leverage practices into all program components.

Creating New Data Points

Before the NGEI grant, one of the issues we wrestled with was a lack of depth or nuance in our performance data. We monitored candidates closely, and candidates who were not making progress received intensive support. Typically, they responded to this support and developed the competencies required for the credential. However, when we reviewed our performance data, it was difficult to determine these differences in candidate development and to understand how the programs might respond. As a result, we developed an additional layer to our evaluation process which involves the candidate's own assessment of the contributors to performance (own ideas, coursework, clinical experience, peers, etc.) and specific instances of effort from the university supervisor (e.g., lesson plan revisions requested, amount of time invested in support lesson preparation, etc.). We refer to these two pieces of additional data as the "level of effort" associated with each observation rating, which allows us to apply something like a degree of difficulty to the observation rating, thus giving us a better understanding of what was involved and the level of support and effort associated with each observation assessment. This form is available to candidates, supervisors and cooperating teachers through an online platform (TaskStream). Supplement [KTE 4.8 Sacramento Level of Effort Form](#) is a version of this form captured as a PDF; the TaskStream version has more functionalities than could be captured here.

As we rolled out this additional layer of assessment, we were better able to identify candidates who were excelling, especially through strong and mostly independent integration and application of program content, as well as those who needed an inordinate amount of support—although both may, ultimately, demonstrate similar performance. Given this new data point, we could provide differentiated support to candidates and flag candidates who were consistently needing heavy support for investigation as to how to best support them. We could also provide support and feedback to supervisors so that they could offer lighter support to candidates who were meeting competencies and heavier support to candidates who were struggling.

Changing Data Processes

Use of data has always been a part of our practice, particularly for our instructional faculty and the university supervisors. Cooperating teachers are often part of the discussion about candidate attainment of required competencies. The NGEI work provided us with the tools and opportunity to make important changes to our data protocols. First, we focused in on a manageable set of indicators. Prior to NGEI, our student teaching evaluation form contained over 40 items, not all of which were realistically assessable in a clinical observation. Additionally, the calibration process for raters had been generally loose. Implementing a protocol related to our prioritized skills strengthened the reliability of our observation data and, in so doing, provided us with better tools to teach our candidates a focused set of high leverage practices. It also provided our team of faculty, supervisors, and cooperating teachers with a common language with which to speak about effective teaching, something that greatly enriched our discussions.

With respect to operationalizing the prioritized skills and formative assessments, we embedded the prioritized skills rubric items into our mid-term and final student teaching evaluation form, which is organized in rubric form. Thus, at one point in the first semester and two points in the final semester, these data were collected, along with all other ratings. For at least two additional clinical observation cycles, supervisors specifically rated the prioritized skills items and candidates specifically reflected on them. Further, faculty developed an activity or assignment for each course that aligned to the prioritized skills. They evaluated the candidates on their performance and then entered their ratings into a common form. This form allowed project leadership to view individual candidate performance across all components of the program on the prioritized skills.

What We Learned

KTE 3 is probably the most important element for a successful partnership. Making progress in practice-based clinical preparation requires significant internal coherence among program elements and stakeholders, ongoing and clear communication across all partners and stakeholders, and an ability of all stakeholders and partners to stay focused. In the dynamic realities that characterize both partner institutions, these fundamental building blocks of KTE 3 are challenging to achieve.

We learned that teacher educators (faculty, supervisors, cooperating teachers) engage their work with an approach that is both humanistic and holistic. They often operate on intuition, guided by expertise and prior experiences and informed by aspects of the teaching context. They are positive and hopeful in their outlook, particularly as it relates to how candidates will develop, and they enact different theories of new teacher development in their respective domains. We found that it was counter-cultural to focus on specific instructional skills, to implement standard practices and activities, to enact a shared vision about new teacher development and to coordinate across various segments and contexts.

Though these demands were counter-cultural, we also found that re-culturing was possible. One essential factor in this change was reporting data about candidate performance more frequently than our existing protocols and systems allowed. We added new data elements in order for the prioritized skills data to generate meaningful conclusions. These additional data points allowed us to interpret the prioritized skills' ratings with more nuance and contextual information. We also shared the qualitative details about course assignments and activities so that quantitative ratings of candidate performance could be interpreted with more depth.

Scaling and Sustaining

During the third year of the project, CSU Sacramento received a five-year, \$3.5 million-dollar Teacher Quality Partnership Grant (TQP) from the U.S. Department of Education. This grant allowed us to expand our partnership work to an additional school district, San Juan Unified School District, which is the 11th largest school district in the state of California. The infusion of funding means that we can scale our efforts; while we began our NGEI work with participation by one fourth of teacher candidates at CSU Sacramento, now one half of all candidates and their cooperating teachers will benefit from these innovative approaches to teacher education.

In the future, will continue our work on alignment between coursework and fieldwork focused on practice-based teacher education and high leverage practices. In addition, we are in the process of creating a curriculum and professional development map, which outlines the alignment between coursework, fieldwork and stakeholder professional development.

Our summer institutes for cooperating teachers, supervisors and faculty have led to successful outcomes, and with TQP grant support we plan to continue these 35-hour professional development workshops. During the summer institute of 2019, we shared and discussed high leverage practices, knowledge and skills related to the mentoring role and the program's curriculum and key milestones. During our upcoming summer institute in summer 2020, participants will engage in activities that replicate how the high leverage practices are taught in our coursework, so that the stakeholders can better support candidates in putting them into practice in their coursework and classrooms. We think this significant investment in preparing all of the key stakeholders for delivering their individual and integrated elements of the teacher preparation program will contribute greatly to sustaining the key features of the NGEI work. With the support of federal TQP grant funding, we will be able to implement the institute and academic year professional learning sessions for five years.

Our high leverage practices will continue to be revised based on our learnings. We recently added "Building Respectful Relationships" to our body of high leverages practices that are integrated throughout coursework and clinical practice. This HLP has a specific focus on classroom management, which was missing from our previous list of prioritized skills. This change will bring an important focus to this area, which we predict will be appreciated by the cooperating teachers. Our hope is that an early and explicit program emphasis on classroom management will allow cooperating teachers to later focus on other important high leverage practices with their teaching candidates.

The authors would like to thank the following individuals for their contributions to the NGEI work:

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Lynn Solari, CSU Sacramento

5. PROVIDING FORMATIVE FEEDBACK ON PRIORITIZED SKILLS

KTE 4 Formative Feedback on Prioritized Skills: Identify and continue to strengthen opportunities for candidates to receive feedback on their mastery of prioritized skills during clinical preparation. Structure opportunities for feedback from faculty as well as from strategically selected, well-supported cooperating teachers.

Goal: By 2018–2019 school year, partnerships establish protocols for selecting and preparing cooperating teachers, field supervisors (or similar role) and faculty such that all parties can give feedback on the same prioritized skills. Candidates will receive feedback on their competency with prioritized skills multiple times throughout the clinical experience.

The focus of KTE 4 was to ensure that all teacher candidates received the highest quality feedback throughout their clinical practice. To achieve this Key Transformation Element, NGEI projects made efforts to ensure that all individuals who conducted observations of candidates understood the project's prioritized skills and could base their feedback on this understanding. In this chapter, CSU Bakersfield and CSU Fullerton explain how their partnerships worked toward this goal.



California State University, Bakersfield

CSU Bakersfield is located in southern California, in the city of Bakersfield, which lies 110 miles north of Los Angeles. CSU Bakersfield (CSUB) has a student population of over 9,000 with approximately 250 credential completers each year. For the NGEI grant, CSUB partnered with Bakersfield City School District in designing the Kern Urban Teacher Residency (KUTR). One goal of the partnership was for resident teachers to have consistent, quality feedback from observers, including mentor teachers, university supervisors, and the district math and science curriculum experts who served as program coaches. By the project's third year, all residents received quality feedback at least twice per month, but usually more often, from their various support entities. Reflections from CSU Bakersfield describe how this outcome was achieved.



REFLECTION:

Holly Gonzales and BreAnna Evans Santiago, CSU Bakersfield

Brandon Ware, Bakersfield City School District

Professional Development Around Prioritized Skills

To meet the goal of effective feedback, all observers needed to be knowledgeable about KUTR's seven prioritized skills ([5.1 Bakersfield Prioritized Skills](#)) and trained to use the residency's observational rubric, the Danielson Observational Protocol ([5.2 Bakersfield Danielson Observational Protocol](#)). The prioritized skills and corresponding rubric served as anchors for teacher preparation and professional development within the residency.

We strategically designed professional development in an effort to develop competence and team calibration around the prioritized skills and observational protocol. The residency coordinators began each academic year with an orientation that included foundational training surrounding these key factors. The orientation was facilitated in a "pairs" model, with residents and mentor teachers learning together about the residency program's general routines and procedures, prioritized skills, and candidate feedback and support. After the initial orientation, the coordinators co-facilitated monthly trainings on prioritized skills for the resident teachers, mentor teachers, university supervisors and program coaches. Skills were explicitly explained, modeled and discussed. Teaching and learning resources were provided to support the understanding and implementation of the skill.

By engaging in these trainings with residents and mentors, all individuals who would be observing residents learned to identify what the prioritized skills would look and sound like when enacted in the classroom. In initial monthly trainings surrounding the quantitative feedback provided to the resident teachers, the Danielson observation protocol resources and tools were disseminated and developed two to three components at a time. For example, in early programmatic monthly

training would include development around Danielson Framework Domain 2—Class Environment, components 2a, 2b and 2c. Components would be explicitly introduced, described and discussed, and then video observations would take place in order to identify what the component looks and sounds like in the classroom. This understanding of the observation protocol enabled the mentor teachers to focus their observations of residents on evidential feedback, which was key to achieving the goals of KTE 4.

In cohort 2, a phase-in schedule was created in an effort to scaffold the resident teachers' gradual take-over of instructional duties ([5.3 Bakersfield Phase-In Schedule](#)). The document outlined the resident and mentor sharing and shifting of responsibilities and was organized by component or prioritized skill. With this document, coordinators were able to develop monthly trainings that were in sequence with the phase-in schedule's scaffolded development of each skill. Furthermore, residents had ample time to practice each skill before evaluation occurred; the introduction and practice of prioritized skills were strategically mapped out across university coursework and trainings.

Feedback Quality: Progression Over Time

The importance of carefully and consistently developing feedback quality became a programmatic focus that grew over time. Early in the grant, we realized that there was a variation in regards to the quality and frequency of feedback being provided to residents. Our expectation was that university-based supervisors complete six observations each semester, mentor teachers complete two observations each month and program coaches complete two observations each semester. The product of each observation was a written evaluation of a resident's instruction that consisted of rubric scores, evidential feedback to support scores and suggested next steps for continued learning. In the first cohort, there was a discrepancy in the frequency of feedback provided, as some resident teachers were receiving more feedback than others. In an effort to strengthen this practice, coordinators began to send out reminder emails and discuss the importance of progress monitoring of the resident teacher skills more consistently and effectively during monthly trainings. Observation frequency was more closely monitored by the leadership team in an effort to hold mentor teachers accountable. Resident teachers were also made aware of the observation due dates and timelines in additional efforts to send one consistent message and to hold all parties accountable.

We also saw that candidates were receiving feedback that was inconsistent, unfocused, biased and not rooted in factual evidence. For example, mentor teachers would sometimes provide feedback that included superlatives and generic praise or compliment. Furthermore, they would often use statements that were non-evidence based judgments such as "I feel...", "I like..." or "Good job".

Key to our progress was the continuous improvement of our monthly professional development sessions. The more we tightened up professional development, the more everyone agreed that there was a great significance around consistent, quality feedback to the practicing resident teacher. Supplement [5.4 Bakersfield Professional Development Overview](#) shows how our professional development sessions were organized at the end of our three-year grant.

Over the grant period, we provided mentor teachers, program coaches and university supervisors with additional training so that they could provide unbiased, accurate, fact-based feedback.

In an effort to bridge and align understandings, observers were guided through an analysis of the prioritized skills and observational protocol components that aligned with each skill. Observers were provided with a crosswalk document that listed the indicators, or what to "listen for" and "look for" when observing a skill or component ([5.5 Bakersfield Skills Crosswalk](#)). With this tool in hand, a variety of short teaching practice clips were shared with the team of observers, and we worked together to practice capturing evidence of skills practiced during the observation. We debriefed on evidence gathered and discussed any misconceptions or ineffective evidence or feedback.

We provided mentor teachers, program coaches and university supervisors with additional training so that they could provide unbiased, accurate, fact-based feedback.

Supplement [5.6 Bakersfield Feedback Progression](#) shows the progression of feedback quality over three years, from 2016 to 2019. The feedback example from Cohort 1 portrays the mostly generic statements and lack of explicitly observed evidence that was often included as the evidence that loosely supported the quantitative score. Later, in examples from Cohorts 3 and 4, we see more detailed, fact-based observational evidence noted to support the quantitative score.

Calibration soon became a “must-do,” and although the task of calibrating a team of evaluators was difficult, it became a non-negotiable task. All residency participants and stakeholders realized that focusing on providing a consistent level of high-quality feedback has had an incredible positive impact on resident teachers and their teaching.

Use of Data

Having a consistent feedback process allowed us to use data for continuous program improvement. The qualitative and quantitative results for each observation were collected in a Google sheet. Data collected during each four-week span were analyzed by the program leads in order to identify trends, celebrations and areas of needs. During the monthly trainings, data were shared with residents, mentors, supervisors and coaches. A group analysis fostered a collective ownership of the data and enabled us to identify trends in resident observations. These discussions were essential to ensuring mentors, supervisors and coaches were calibrated in the feedback process. The collective analysis also helped us to discover which prioritized skills needed additional reinforcement in coursework and clinical practice. We guided residents through a self-reflection process in which they analyzed their observational scores and feedback, celebrated their growth and determined next steps.

Developing a consistent data collection process benefited many aspects of our NGEI grant. The core leadership team used the data to analyze programmatic structures and success, as well as areas of need that needed to be addressed and possibly adjusted.

Scaling and Sustaining

Data continues to serve as the driver for all decisions made in the residency partnerships so that we can continuously improve programmatic structures that influence and support the resident teacher's preparation. Moving forward, Kern Urban Teacher Residency will continue to collect data in the same format, with our prioritized skills as the anchor and the Danielson observational protocol as the feedback tool. Program coordinators will continue to monitor and analyze the data in order to support growth and address trends. These data will continue to be disseminated among all program stakeholders on a monthly basis.

As we move into sustaining our work after the grant, some observation and feedback practices will be slightly adjusted and most will stay intact, as they play an intricate role in the continuous improvement of the program. The prioritized skills list and phase-in schedule have been slightly adjusted and, as living documents, these will be adjusted over time. All progress monitoring and observational feedback will continue to be rooted in the prioritized skills and observed through the lens of the rubric components. The feedback will continue to be completed through the use of online forms (one for each resident teacher). The online forms submitted at the completion of an observation are filtered into an automatic PDF that is sent to coordinators, the mentor and resident teacher. The data are also automatically pushed into a spreadsheet that is monitored by the coordinators and trends will be disseminated for learning and improvement purposes. In the past, the program was able to support the role of a Continuous Improvement Lead who maintained a deep level of data filtering and analysis. With this position dissolved after the grant funding ended, the coordinators will assume the duties of management of data collection and analysis.

Some observation and feedback practices will be slightly adjusted and most will stay intact, as they play an intricate role in the continuous improvement of the program.

The program coordinators will continue to co-facilitate monthly trainings that include explicit professional development surrounding the prioritized skills and Danielson observation procedures. There will be no loss or change in the structures and effectiveness of professional development of the program coaches, university supervisors, mentor teachers or resident teachers. The existing professional development calendar will remain intact and will be adjusted to meet specific needs of the current academic year.

The Kern Urban Teacher Residency program will continue to recognize the great significance of consistent, effective feedback provided to the resident teacher, both by the supervisor and mentor teacher. The program will remain reflective, and rooted in the analysis of data in an effort to continue to continuously improve programmatic structures and develop highly qualified educators.

The authors would like to thank the following individuals for their contributions to the NGEI work:

Debbie Meadows, CSU Bakersfield

Diane Cox, Bakersfield City School District

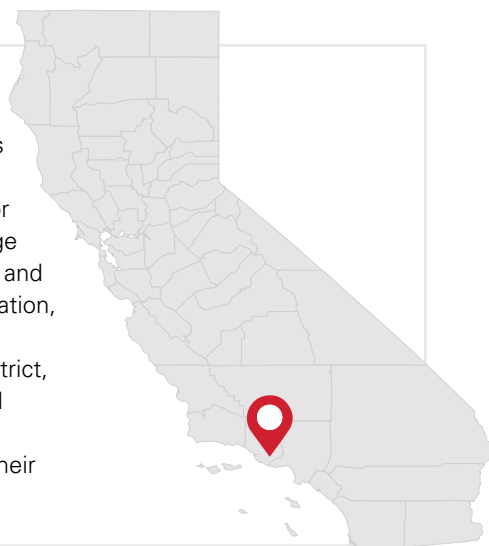
Kristina LaGue, CSU Bakersfield

Marc Luque, Bakersfield City School District

Valerie Saylor, Bakersfield City School District

California State University, Fullerton

CSU Fullerton, with a student population of just under 39,000, is located 35 miles south of Los Angeles. Each year the university has approximately 450 teaching credential program finishers. For its NGEI project, CSU Fullerton established cross-college (College of Education and College of Natural Sciences and Mathematics) and cross-department (Departments of Elementary & Bilingual Education, Secondary Education and Special Education) collaborations in a partnership with three districts: Anaheim Union High School District, Orange Unified School District and Placentia-Yorba Linda Unified School District. As they worked to meet the goals of KTE 4, this project's team focused on supporting university supervisors in their crucial role as clinical coaches for teacher candidates.



REFLECTION: Mark Ellis and Hallie Yopp Slowik, CSU Fullerton

Choosing a Rubric

After careful consideration and in keeping with our prioritized skills, we selected as our rubric the Mathematics Classroom Observation Protocol for Practices, or MCOP2 (Gleason, Livers, & Zelkowski, 2015). We adapted the instrument to meet our needs, keeping only items related to student engagement, which was one of the two constructs of the original tool. We field tested the instrument with clinical coaches, math methods course faculty, mentor teachers and teacher candidates, and based on their feedback we made a few additional modifications to ensure clarity regarding the intent of each item. The content of the MCOP2 ([5.7 Fullerton MCOP2](#)) was incorporated into math methods courses in every credential program and integrated fully into the clinical experience for all multiple subject candidates, all math and foundational-level math candidates, as well as candidates in the mild/moderate and moderate/severe education specialist programs with fieldwork placements in our partner districts.

Essential to the integration of MCOP2 throughout our programs was the development and implementation of a seminar grounded in not only the use of the tool but the rationale behind the shifts it reflects in terms of student engagement during math lessons. A team of faculty worked for one semester to develop, pilot and refine the training. This training consisted of a three-hour interactive session that began with a math talk activity, provided some context for the shifts in mathematics education, and used classroom video clips to examine and deepen participant understanding of the MCOP2 student engagement items. The resulting training was rolled out project-wide and beyond, through partnerships with national efforts.

Focusing on Evidence Statements

Data obtained through our learning sprints about early implementation of the MCOP2 indicated confusion among clinical coaches/supervisors about the meaning of some of the rubric items as well as insufficient attention to including evidence statements to support assigned ratings. To address these issues, follow up training sessions of 30 to 90 minutes were developed to provide opportunities to better define key terms (e.g., what it means for students to “engage in problem solving” versus skill practice) and share examples of quality evidence statements. In addition, clarifying language was added to MCOP2 observation protocol forms to support coaches and supervisors with item interpretation. As a result of these efforts, confusion lessened and the quality of evidence statements improved. Since the first year of the project, MCOP2 training has been provided for all multiple subject and education specialist program faculty who teach math education courses as well as all university supervisors, all math and foundational-level math faculty and supervisors, all administrators in two of our partner districts (and many in a third), and many of the mentor teachers who work with our teacher candidates.

Additional Support for Clinical Coaches

During the course of the project, the role of “university supervisor” transitioned to that of “clinical coach,” a change that communicated an increased focus on and support of the development of teacher candidates’ skills in the field. Clinical coaches played a crucial role in teacher candidates’ development in that they provided feedback to and facilitated reflection by teacher candidates in the clinical setting. Enhancing their preparation strengthened opportunities for teacher candidates to receive high quality feedback. All clinical coaches participated in a variety of interactive professional learning workshops in which they learned about and shared effective practices. In addition to workshops on observation practices, session content included an explanation of the California Teacher Performance Expectations, with a focus on inclusive education and pedagogical practices that candidates were learning in their methods courses. These sessions ensured consistency between candidate learning in coursework and field observations and enabled clinical coaches to support teacher candidates in setting professional goals.

Coaches also were provided other supports, including written documents, videos of coaching processes and online resources. Our team created support guides for clinical coaches to use during MCOP2 observations and discussions with candidates, such as the one shown in [5.8 Fullerton Math Observation Guide](#). To assist with score assignment, we created a guide that explained what to look for when observing for indicators ([5.9 Fullerton Observation Cheat Sheet](#)). From observation data, we pulled exemplars of evidence and provided clinical coaches with examples of evidence that might be provided for the assigned score (see [5.10 Fullerton Sample Evidence Statements](#)). We created video exemplars of, for example, post observation conferences with teacher candidates, to give clinical coaches further support. The purpose of the videos was to model an approach for clinical coaching that followed this process: candidate reflection about the lesson, discussion between the observer and candidate focused on the candidate’s goals (targets) and the identification of future targets. In addition, for each credential program, our team designed a Moodle community site that was dedicated exclusively to clinical coaching and updated regularly with new resources. Coaches expressed considerable enthusiasm for the resources and requested more. For example, they asked that methods instructors provide brief methods-course specific (e.g., literacy, math, science, social studies, visual and performing arts) resources—video preferred—in which instructors highlight key subject-specific practices that coaches might look for in the field placement.

Positive Outcomes

Attention to clinical coaches’ skills and knowledge resulted in 100% of clinical coaches indicating in an anonymous survey that they felt “well prepared” for their role to support teacher candidates’ in the clinical setting. Their preparation likely explains teacher candidates’ responses to a spring 2019 survey; data indicated that teacher candidates overwhelmingly found their coaches influential in their professional development (see supplement [5.11 Fullerton Impact of Clinical Coaches](#)). Representative anonymous comments from teacher candidates included the following:

- “I loved getting back feedback and writing down target goals. Once I knew what my target goals were, I always tried to improve them on my next lesson.”
- “She always provided such great feedback and constructive criticism. She would give me things to work on, and I would improve them in my next lesson. She was straightforward with communication and very approachable. I really enjoyed working with her.”
- “Having an experienced clinical coach reflect with me on my lessons was an excellent tool I was able to use in order to better develop me as an educator. We were able to work as a team in order to enhance my ability to teach in a way that increased student learning.”
- “My clinical coach did a fantastic job at providing me with support and effective feedback that helped me reflect on my teaching experiences as well as practice new strategies. I highly appreciate her willingness to help and the advice she provided me.”
- “Having a clinical coach is a great resource for when a teacher candidate has any questions or concerns regarding their fieldwork and student teaching experiences. It was also nice to have someone to collaborate with on how to improve my lessons and move forward in teaching.”

In addition to comments, quantitative data gathered from multiple subject candidates indicated that most believed that observations and feedback from their clinical coaches contributed “a great deal” to their professional development, as displayed in the bar graph in supplement 5.11.

It is our belief that clinical coaches serve as one of the most important variables in our candidates’ professional learning because they guide candidates in the field to implement skills they learn in methods courses. They serve as a critical connection between coursework and clinical practice. This project’s efforts to build an exceptional cadre of clinical coaches is one of its success stories.

Scaling and Sustaining

On the basis of their positive experience using MCOP2 to support teacher candidate learning about quality mathematics lessons, clinical coaches and district partners expressed an interest in having rubrics that would inform their observation of other subject areas. Thus, several faculty members across credential programs collaborated with a science education faculty member in the College of Natural Sciences and Mathematics to create a draft rubric for science observations similar to the MCOP2. Feedback was solicited from individuals in the field (e.g., science specialists for the county office of education, district teachers on special assignment and science educators across the nation). Feedback informed revisions to the draft, which has been pilot tested by a clinical coach. The rubric continues to be in development and will be implemented in multiple subject science methods courses on a trial basis in the 2019–2020 academic year. The single subject program science faculty are also using it in their methods courses and for observations of candidates in the clinical setting. In addition, a literacy faculty member provided a workshop for clinical coaches in which exemplary practices in literacy teaching were highlighted. Much interest was expressed in developing guidelines for literacy observations (and other subject areas), something that is likely to be taken up in the future.

Quality feedback is crucial to teacher candidates’ development. Ensuring that clinical coaches—those who work to create a strong link between coursework and practice in the field—are well prepared to provide that feedback has become one of the marks of our credential programs. Although NGEI funding is no longer available, we have lasting resources that support veteran and new coaches in providing targeted and actionable feedback.

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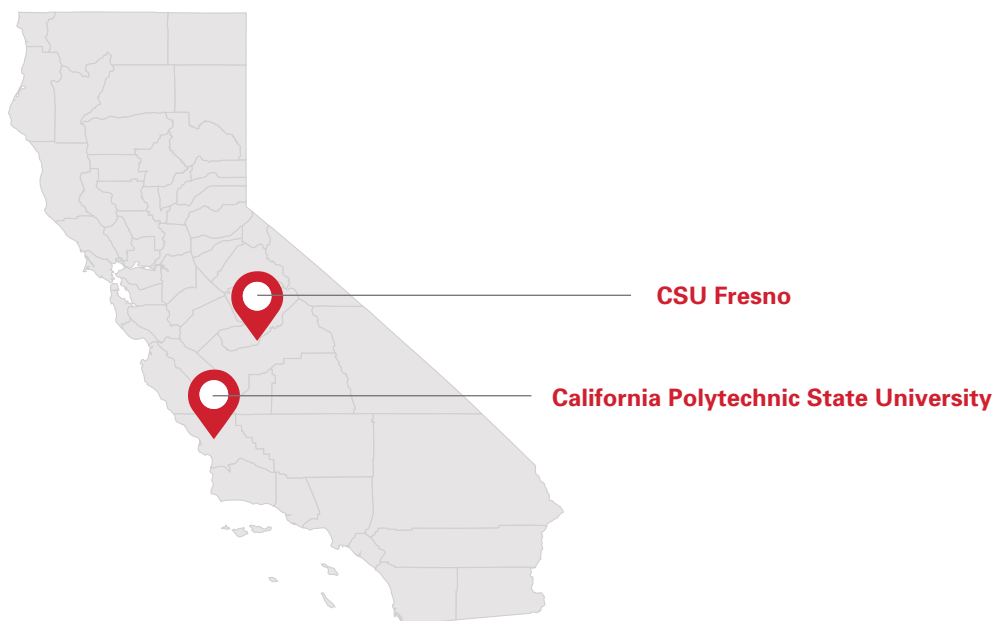
Patrice Waller, CSU Fullerton

6. USING DATA FOR CONTINUOUS IMPROVEMENT

KTE 5 Data Driven Continuous Improvement: Collect data on candidate progress toward facility with prioritized skills during preparation and after graduation, building data-sharing partnerships where necessary to ensure access to information. Use this data to effect changes at the college, department, pathway, course and coaching relationships levels. Continue to use data to refine definition of the prioritized skills new teachers must master.

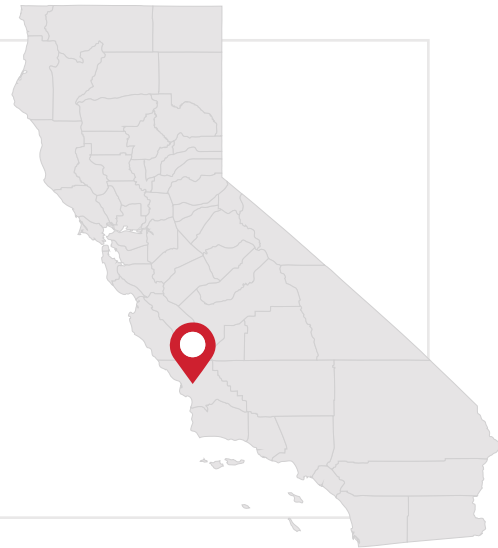
Goal: By 2018–2019 school year, partnerships establish routines for reviewing data on individual candidates' progress toward competency with prioritized skills to inform coaching and teaching during the school year. In addition, partnerships will have routines to review longitudinal data on year-end candidate surveys, one year out candidate and supervisor surveys, district ratings of new teacher effectiveness and other data that can continue to inform the partnership. Partnerships will be able to identify meaningful programmatic changes made as a result of this data.

KTE 5 challenged partnerships to engage with data in meaningful ways to inform teacher preparation. To support this work, the grant provided funding for an individual to serve as Continuous Improvement Lead (CIL) for each partnership. The CIL, with the support of consultants from WestEd and SRI, led partnerships in the collection and analysis of data to inform the direction of grant-funded changes. Informed by research on improvement science, project teams engaged in a series of “learning sprints,” characterized by short cycles of data collection and analysis to study aspects of systems of teacher preparation. The two CSUs highlighted in this chapter—California Polytechnic State University, San Luis Obispo and California State University, Fresno—each used this learning sprint process to monitor grant innovations and to make significant changes in the assessment systems in their educator preparation programs.



California Polytechnic State University, San Luis Obispo

Cal Poly San Luis Obispo's campus is located in central California, 10 miles from the coast in the mission town of San Luis Obispo. With a total student population of 20,000, its credential programs graduate approximately 150 new teachers each year. Cal Poly San Luis Obispo partnered with the Lucia Mar School District, the largest school district in San Luis Obispo County, with over 10,000 students in grades K–12.



REFLECTION: Tanya Flushman, Sarah Hegg and Megan Guise, Cal Poly San Luis Obispo

Overview

For this KTE, our partnership's focus was on using continuous improvement science to better understand and improve the achievement of teacher candidates and recent graduates. In particular, we implemented continuous improvement practices to improve the written feedback university supervisors provide to teacher candidates. Later, our team used continuous improvement science through participation in a fellowship to help support new teachers and recent credential graduates in a new teacher learning community for one of our partner districts.

As typical of continuous improvement learning, the team engaged in a series of short, targeted learning segments or sprints that are listed below:

- **Learning Sprint 1:** Determine the quality of university supervisor written feedback during the 2015–2016 academic year before a common observation tool and protocol were implemented.
- **Learning Sprint 2:** Determine how engaging supervisors in the reflective practice of analyzing their own written feedback might improve the quality of feedback provided.
- **Learning Sprint 3:** For a subset of supervisors during academic year 2016–2017, determine the frequency, type, and quality of feedback that supervisors provided to candidates to support their teaching of students who are emergent bilinguals.
- **Learning Sprint 4:** Over a three-month period (December 2017 to February 2018) determine the quality of the professional development provided to supervisors on how to support candidates in teaching students who are emergent bilinguals.
- **Learning Sprint 5:** During winter and spring of 2018, determine the impact the professional development on the feedback supervisors provided that focused on prioritized skills A5 and C5 (teaching students who are emergent bilinguals).
- **Improvement Research Fellowship:** By June 2019, participants in the New Teacher Learning Community will develop a sense of belonging, communication skills, and ability to problem solve, allowing participants to better navigate the transition to the first year of teaching.

Learning Sprints 1 to 5 focused on analyzing and improving supervisor written feedback (both in general and specific to supporting emergent bilinguals). For the 2018–2019 academic year, we joined a Continuous Improvement Fellowship to continue and deepen our work in improvement. During this

fellowship we focused on creating and facilitating a new teacher learning community for first year teachers in Lucia Mar School District. Our aim was to create a smoother transition from teacher preparation to the first year of teaching.

University Supervisor Feedback

Our common observation rubric was at the heart of our work to improve supervisor written feedback. Our district partners worked with a representative group of faculty and staff from each of our credential programs to create an observation rubric inspired by the Danielson Framework for Teaching (see supplement [6.1 Cal Poly San Luis Obispo Observation Rubric](#)). The rubric identified 17 prioritized skills for teacher candidate evaluation in clinical practice. We grouped these 17 prioritized skills into four domains: 1) planning and preparation, 2) classroom environment, 3) classroom instruction and 4) professional responsibilities and reflection. The observation rubric and the corresponding observation form ([6.2 Cal Poly San Luis Obispo Observation Form](#)) were created to standardize observations across programs and ensure reliability of scorers. We created a written protocol that supported standard usage of the tool, outlined candidate observation frequency and described report submission procedures. To further support the usage of the tool and ensure validity of the scores, we created a series of professional development workshops for university supervisors and cooperating teachers, who would be conducting classroom observations. These workshops used video observations to train and calibrate users on rubric use and enriched participants' understandings of the prioritized skills (e.g., supporting emergent bilinguals) so that they could provide meaningful feedback to candidates.

For Learning Sprints 1 and 2, we first focused on analyzing baseline data on supervisor written feedback and then tested a small change (i.e., having a subset of supervisors analyze and reflect upon their feedback) to see if this small change impacted the quality of feedback. We also sought to explore the why behind supervisor feedback (i.e., what influenced the feedback provided). To determine the baseline alignment/variation in supervisor observation reports, in the 2015–2016 academic year we collected a total of 30 sample observations from our three programs (multiple subject, single subject and special education). We analyzed these observations using a coding scheme and our findings indicated a wide range in the type, amount, and quality of feedback supervisors provided to teacher candidates across programs (see supplement [6.3 Cal Poly San Luis Obispo Feedback Coding Scheme](#)). These results confirmed our predictions; at that time there was not a standard observation protocol or tool.

Professional development workshops used video observations to train and calibrate users on rubric use and enriched participants' understandings of the prioritized skills (e.g., supporting emergent bilinguals) so that they could provide meaningful feedback to candidates.

Our findings prompted us to offer professional development for supervisors on providing quality written feedback and norming on our common observational tool used across all teacher preparation programs. For the why behind supervisor feedback, we engaged a subset of supervisors in semi-structured interviews and identified three primary influencers: (a) teacher candidate teaching context and individualized needs, (b) supervisor beliefs about teaching and (c) supervisor content knowledge and confidence level. This valuable information was used to drive the focus of future professional development with supervisors.

For Learning Sprints 3, 4 and 5, we continued to examine the quality of written feedback provided to teacher candidates by supervisors; however, we narrowed our focus to look specifically at feedback given on supporting emergent bilinguals. In addition, we provided an "intervention" in the form of a yearlong professional development workshop series to enhance supervisors' knowledge of supporting emergent bilinguals. For Learning Sprint 3, in 2016–2017 we looked at written feedback provided by a subset of six supervisors to determine the frequency, type and quality of feedback focused on supporting emergent bilinguals. For Learning Sprint 4, we examined the teacher candidate's perspective on the quality of the feedback received from their supervisor, including general feedback and feedback specific to supporting students who were emergent bilinguals. For Learning Sprint 5, we analyzed post-intervention data (feedback provided after supervisors engaged

in a series of workshops on supporting emergent bilinguals) to see if a change in feedback occurred to the six supervisors included in our baseline data. We also conducted interviews with each of these six supervisors to gain insight into their feedback process and thoughts on the professional development workshops.

Findings from Learning Sprints 3, 4 and 5 revealed that after the professional development on supporting emergent bilinguals, supervisors more frequently provided units of feedback related to supporting emergent bilinguals than before the workshops. On average, supervisor feedback to candidates after the intervention included five more units of feedback on supporting emergent bilinguals than in pre-intervention feedback samples. In terms of content, supervisors also provided a greater breadth of feedback on supporting emergent bilinguals after the workshops, including an increase in feedback across all scaffolding strategies for emergent bilinguals. One unexpected finding was that while post-intervention supervisor feedback showed increases in quantity and breadth, post-intervention feedback included fewer specific comments than pre-intervention feedback in regards to specific scaffolding strategies.

New Teacher Learning Community

For the Continuous Improvement Fellowship, we created a New Teacher Learning Community (NTLC) for Lucia Mar Unified School District (LMUSD) in order to support new teachers as they transitioned to the first year of teaching. This yearlong community included one-hour NTLC sessions every other month, online support community via a Google site and Twitter handle, co-teaching opportunities with faculty members and social activities. The district and university incentivized participation; new teachers could timesheet their hours or receive salary credit from the district, and the university provided \$250 for attendance at four of the six sessions. All New Teacher Learning Community sessions were jointly planned and implemented by district and university personnel.

Throughout this process we engaged in improvement science, grounded in both process and outcome measures, to inform iterative changes to components of the New Teacher Learning Community. Together, district and university representatives constructed visuals such as the fishbone diagram to help us identify challenges of the transition to the first year of teaching (see supplement [6.4 Cal Poly San Luis Obispo Fishbone Diagram](#)). In turn, that study of the transition helped us to decide the most essential elements to include in our New Teacher Learning Community. Changes to the structure and content of NTLC sessions were made based on improvement learnings from numerous Plan-Do-Study-Act (PDSA) cycles. For example, originally, the team included an online Google Classroom component to the community. However, after study and explicit intervention, this part of the community failed to thrive with extremely low participation and, in turn, it was discontinued.

Within this community, new teachers engaged in reflective thinking, community building with peers, and collaborative problem solving. New teachers who participated in the NTLC (n=21) found increased confidence around key constructs at the culmination of the experience. NTLC findings have implications for future collaboration between teacher preparation programs and school districts to jointly support new teachers and together mitigate challenges first year teachers face.

Learnings from Continuous Improvement

By engaging in program improvement, we learned the importance of ongoing data analysis and piloting and testing small changes before enacting larger changes. One thing that hindered progress was the sheer amount of data, specifically supervisor written feedback, available for analysis. Because of this challenge, we learned how it can be useful to look at a subset of data that is characteristic of the larger body of data. Finally, while professional development for supervisors was important to improving their written feedback, we learned that the observation form and protocol is just as important in impacting the quality of feedback provided. Small changes to both saw improved quality of feedback, showing the importance of examining the system and processes in place when striving for program improvement.

KTE 5 was significant in our accomplishments in that it provided us with a methodology/process for achieving outcomes associated with KTE 4, which focused on providing quality feedback to candidates. Frequent analysis of small sets of data allowed us to make changes to our supervisor workshop series both in content and structure. Similarly, data-driven program improvement allowed us to create

a New Teacher Learning Community that was responsive to the needs of participants and thus, we think, led to its success and future funding by the district. Furthermore, the NTLC was an example of a true partnership between the district and university, allowing both parties to engage in data-driven improvement, create mutual goals, and pool resources. Finally, one of the most significant impacts of KTE 5 was that the ethos of continuous improvement spread to other parts of the School of Education. For example, our assessment coordinator now supports quarterly data conversations as a school and with individual programs that are reflective of the continuous improvement approach.

The biggest impact on our work from engaging in continuous improvement is the realization that frequent and iterative data collection and the study of small-scale change is important. In education, we often engage in research that includes large data sets and spans an academic year, with findings and dissemination occurring a year or so after that. We have learned that using data for the purpose of program improvement and not necessarily for publication is useful and valid. We also learned that it is helpful to narrow the scope of this investigation in order to fine-tune the system and processes at work.

In addition, our professional development in improvement science research has equipped us with numerous tools that will continue to guide our program improvement efforts. For example, empathy interviews, process maps, fishbones and driver diagrams will continue to influence small changes we make to our programs. These tools are also helpful to practicing teachers who want to critically reflect on their practice and could influence future program coursework.

Scaling and Sustaining

Due to the wide-spread ways in which continuous improvement has permeated our culture as a unit, it is highly likely that many of these practices will be sustained. We will continue to engage in our unit-wide quarterly data-analysis protocol to examine data collected from the clinical practice. We also have plans to implement continuous improvement when working on teacher recruitment as a part of a federal Teacher Quality Partnership (TQP) grant. The co-principal investigator will use continuous improvement techniques to identify barriers to recruiting teachers. For example, empathy interviews with prospective applicants will help us to understand why students choose or do not choose teaching as a career path.

With regards to supervisor written feedback, we intend to sustain the professional development workshop series during which supervisors examine their feedback, set feedback goals and use exemplars to examine what constitutes quality written feedback. This workshop series will be funded by the TQP grant and led by the clinical practice coordinator, a sustainable staff position. Furthermore, program- and unit-wide data analysis protocols have been established so that faculty and staff can engage in quarterly examination of feedback data beyond the grant. Finally, the New Teacher Learning Community will be sustained after the grant because the district will fund this opportunity for its first- and second-year teachers. Cal Poly San Luis Obispo will continue to have one to two faculty members contribute to the development and facilitation of the New Teacher Learning Community sessions, and the district will pay for the district faculty to develop content and pay their new teachers to attend. We also plan on scaling the NTLC to two other districts that are partnering with us for our TQP grant.

The authors would like to thank the following individuals for their contributions to the NGEI work:

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California State University, Fresno

California State University, Fresno is a campus of over 24,000 students and is located in the southern portion of California's San Joaquin Valley. Each year CSU Fresno has approximately 475 completers of its credential programs. For KTE 5, CSU Fresno, together with three partner districts (Fresno Unified School District, Sanger Unified School District and Central Unified School District) focused on establishing routines for reviewing multiple forms of data on candidates' progress and other indicators of program effectiveness, and using these data to identify meaningful programmatic changes.



REFLECTION: Heather Horsley and Cathy Yun, CSU Fresno

Prior to the New Generation of Educators Initiative, it was unclear what data were available; once it was determined that the data existed, it was a scavenger hunt to find the keeper of the most recent data or historical data if needed. This was a barrier to preparing grants and reports and, most importantly, to continuous improvement in the educator preparation programs. Some data were collected on triplicate carbon paper and locked away in a file cabinet. Data transparency and analysis were not part of the culture. In fact, it was a challenge just to introduce the idea of data collection, sharing and transparency. We encountered much opposition and arguments against data-driven continuous improvement. It is a pivotal shift that our programs have made to not just collecting data but to examining those data together as a program and asking questions that may lead to program changes based on the data.

Regular Use of Data

District partners have been a positive influence and model for program leadership and faculty in regard to data-driven continuous improvement. In particular, Fresno Unified School District leaders leveraged their own district data to help drive continuous improvement, starting with the residency cohorts. District and site leaders began regularly presenting district, site and residency cohort data at partnership meetings. Data were from multiple sources including, but not limited to, direct observations, anecdotal notes, resident progress tracking, student test scores, external program evaluations and interviews. These data were routinely shared and used to identify areas of success as well as puzzles of practice that could be addressed in a timely manner as they emerged. As this practice became routinized, the residency team began to pull in more stakeholders who were encouraged to attend partnership meetings. Cohort coordinators, university coaches and cohort course faculty began attending meetings and were exposed to district data regarding resident experience, impact on student learning, mentor experience, observations by residency administrators and resident outcomes.

In our experience, KTE 5 is a high-leverage Key Transformation Element. The incorporation of data into our conversations with district partners and internal stakeholders has been transformative. As faculty interacted more substantively with district personnel and gained exposure to today's classrooms, they began to realize that data are part of the daily rhythm of classroom teaching. As they awakened to this realization, faculty were more willing to include data literacy as a component in their courses and as part of their own teaching praxis. Having data points related to program content, outcomes and stakeholder experiences encouraged faculty to ask honest questions about the effectiveness of the programs. One critical question, for example, was why our candidates overwhelmingly had a difficult time passing the Reading Instruction Competence Assessment (RICA). In the past, without data as evidence, it was easy for faculty to attribute low success with RICA to other circumstances or dismiss the issue

as low occurrence. However, faced with the data from our district partners and completers, faculty addressed this puzzle of practice through course revisions.

In addition to partner district data, we began to use available data from the California State University Educator Quality Center (EdQ Center) and also to collect data internally to help gain ongoing insights into our programs. The EdQ Center provided tailored professional development for our faculty on how to access data through their dashboard. At first faculty seemed unimpressed with the available data, but as they engaged in the professional development sessions, they discovered that they could ask questions and access relevant data specific to their courses. The dashboard provided a bird's-eye view of program outcomes that many faculty members had not previously considered.

Internal data are now collected regularly and shared with faculty at program meetings and used as a launching point for substantive discussions about the program. For example, we have collected data about candidates' unique, subjective experiences through journey maps (see supplement [6.5 Fresno Journey Map Examples](#)). The visualizations provided by the journey map data provided the concrete evidence needed to persuade faculty and leadership that a more comprehensive, whole-person approach to educator preparation was necessary. Candidates reported struggling with stress and anxiety according to patterns that could be addressed programmatically. These findings prompted discussions of possible strategies for addressing candidate stress, including revising/aligning assignments and providing counseling services. Following our data discussions our faculty also felt more compelled to contribute to our program's continuous improvement efforts. The first discussion of the journey map data created a palpable sense of energy among faculty members as they carried on with the rest of their day. One faculty member shared with the Continuous Improvement Lead:

Using an improvement research framework gave us a broader range of student perspectives.

"I have never seen information shared like this before. I often ask my students for their feedback. I can easily see some of them in this data. Yet, being able to see broad themes of perspectives across the whole program is powerful and is giving me much to reflect on further."

Another faculty member commented:

"...I am troubled by seeing how our program changes are creating anxiety for our students. We know that many experience trauma due to out-of-program factors. We need to consider how we can better manage change so that we don't cause more stress."

Using an improvement research framework gave us an opportunity to see the system from a broader range of student perspectives via inquiry cycles that are systematically designed and implemented across all credential pathways. As a result, we emerged from this process with a deep, renewed sense of collective responsibility for the quality and continuous improvement of our programming. The slides shown in Supplement [6.6 Fresno Faculty Data Discussion](#) capture the process that we used to guide faculty through one of our discussions about data.

The regular use of data in the every-day work of our programs has been a critical transformative shift. Rather than data being a "four-letter word" it now pervades all aspects of the collective work by the university and district partners. This new collaborative approach is best demonstrated by the engagement of faculty and Sanger Unified School District leaders in Improvement Science Fellowship inquiries. In these rapid cycles of inquiry, university and district team members worked together to identify a puzzle of practice, collect relevant data, devise a plan of action and assess the effectiveness of their action plan.

Central to the conversations between the improvement research fellowship team and the district partner was our willingness to be vulnerable. We shared that university educator preparation programs are part of the problem and solution; that we are not looking to point blame at the district, nor do we expect all the change to happen on their end. We advocated to take a look inward in order to identify the areas that require improvement to our processes and methods of teacher candidate preparation. Through this collaboration, the Sanger residency has become stronger and more aligned to the needs of the district for evidence-based instructional strategies for Emergent Bilingual students.

Engagement in Data Inquiry Cycles

Rapid inquiry cycles were introduced gradually to program faculty. Inquiry was first incorporated into the program for teacher candidates. During the program redesign, a three-course inquiry series was introduced as a grounding point for synthesizing course content, evidence-based practices, theory-to-practice connections and reflections on clinical work. Over the three inquiry courses, candidates engaged in data literacy activities, scaffolded inquiries, team inquiries, individual inquiries and facilitation of child-led inquiries. Inquiries were based on puzzles of practice that candidates experienced in the field and provided opportunities for candidates to practice meaningful data collection, research and action planning that could be immediately applied in their clinical placements. Candidates brought artifacts and video recordings of their instruction to share, reflect and receive feedback.

Next, the residency leadership team began engaging in rapid inquiry cycles as part of the grant-related continuous improvement work. This scaffolded series of learning sprints helped establish routines of data collection, analysis, action planning and assessing. Data and findings from these learning sprints were then gradually introduced to university coaches and faculty over the course of two semesters. District partner data and other internal data were layered onto these more formal learning sprints and presented for analysis and discussion at program meetings. From there, infrastructure in the form of faculty learning communities was developed to provide faculty opportunities to work in teams on data-driven course development. Faculty were encouraged to formulate their own puzzles of practice and collect data and revise coursework to address them. Supplement [6.7 Fresno Learning Sprints](#) gives an overview of each learning sprint, including questions, data collected, findings and resulting actions.

Implementation of a New Data System

Prior to NGEI, data were hard to locate. Locked file cabinets held hand-written, paper copies of observations, teaching performance assessment (TPA) data was accessible through a single faculty member, and program data were stored in a spreadsheet somewhere—but no one knew where. Faculty and leaders had limited access to any program-level, coach-level, mentor-teacher or candidate data.

With the realization that data accessibility was key to any continuous improvement efforts, program leadership recognized the need for a comprehensive data management system to collect, store and retrieve data regarding all aspects of the program. After meeting with sales representatives about multiple data management system products, we selected Tk20 based on its flexibility, comprehensiveness and client services. Tk20 was open to tailoring our system to our specific needs. We invited a representative to present to staff and faculty; he spent an entire day on campus presenting, demonstrating and answering questions. These meetings were voluntary for staff and faculty.

Critical to this year-long process was the appointment of a Tk20 Unit Administrator (UA) who was the point person for implementing and rolling out the system. This role was supported through the NGEI grant, with the vision that it would become institutionalized through assigning the duties to a full-time position. This UA was responsible with the day-to-day logistics of implementation, which included consulting with program faculty and leadership, coordinating back-end programming between Tk20 engineers and university technology specialists, building and testing forms within Tk20, creating and sending out virtual binders to candidates, assigning university coaches and documenting mentor teachers, providing professional development for users, creating and distributing user support materials, checking student accounts and reconciling discrepancies, troubleshooting and monitoring data collected through the system.

Even with a UA, the process was challenging. There were many bugs, recalled mass distributions and form rebuilds. The learning curve was very steep, but Tk20 provided excellent support with intensive onboarding, training and professional development for the UA and the entire implementation team including program leadership and campus technology liaisons. This process would have been much more difficult without such a dedicated client-support team.

As one might expect with a large change, the responses of faculty members, coaches, mentor teachers and candidates varied along a continuum from those who bought in early to the idea of a comprehensive data system to those who resisted. In particular, many conflated the concept of data-driven continuous improvement with that of “accountability” and “fidelity”—two concepts that are laden with negative connotations. However, as the residency team began to share the newly available data with faculty and coaches, and stakeholders saw the value of a nimble system in which improvements could be made in real time, buy-in increased. The university coaches, in particular, began to appreciate the ability to have a digital record of documents (such as scripted notes, observation rubric ratings and candidate lesson plans) all in one place and backed up to a server. Coaches and faculty members were able to see how frequently items on the observation rubric were assessed for each candidate and adjust their visits accordingly. They were also now able to track data to see candidates’ growth over time.

The implementation of a comprehensive data management system was difficult but worth it. There were many lessons learned, especially pertaining to the emotional and psychological upheaval that change can produce. However, the result was a flexible and tailored system that could grow with the program over time. It allowed the program to use real-time data to make meaningful improvements and stay at the cutting-edge of the field.

The Continuous Improvement Lead role is instrumental in sustaining the systems and routines for data use to inform our programmatic decision-making.

Scaling and Sustaining

To continue our efforts to use data to make meaningful improvements, we will be focusing on strengthening aspects of our assessment system. First, we are committed to continued maintenance and use of Tk20. We are currently working toward full implementation in the Single Subject Program and Special Education Program. Second, we are developing a calendar to identify dates for regular data points. This calendar will align data sources with specific program decision points. This work has been started but needs continued development and codification (see supplement [6.8 Fresno Data Sources](#)). Third, in order to continue these efforts in the long term, an infrastructure needs to be in place. The development, codification, implementation, and maintenance of an effective data management system requires support by program leadership; it requires a dedicated manager who understands measurement theory, mixed methods research, and improvement science.

At this point, with the support of a new grant, we are also able to continue the Continuous Improvement Lead role that was introduced as part of the NGEI. This role is instrumental in sustaining the systems and routines for data use to inform our programmatic decision-making. Too often a tension emerges in terms of what counts as scholarly contributions in higher education. The Continuous Improvement Lead helps faculty members see that collaborative programmatic research agenda for continuous improvement is just as valuable as the oft-praised, independent research agenda. Part of this effort includes embedding discussions of the principles of improvement science into program meetings. These moments are brief but also powerful opportunities for professional learning because they are not one-off, time consuming training experiences but rather remain part of on-going conversations about the meaning of quality and efforts to continuously improve as a program. As we engage our teacher candidates in how to engage in inquiry and to consider inquiry as a central part of their emerging teacher identity, the NGEI reinforced for us how teacher inquiry is also essential to the identity of teacher educators.

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LOOKING FORWARD

Joan Bissell

In reviewing its exceptional achievements between 2014 and 2019, it is possible to look forward and anticipate a promising future for innovations that began with the New Generation of Educators Initiative (NGEI). On the one hand, the five Key Transformation Elements (KTEs) took shape and are being scaled up and sustained on each of the reform campuses. At the same time, a culture of data-driven excellence was established and is now a campus norm across the California State University (CSU) system. Additionally, the NGEI supported other transformations towards excellence in teacher preparation, including residency-based preparation, that are still growing within CSU.

The first KTE pertains to deepened partnerships between campuses and districts that begin with a shared vision of effective K–12 instruction and reflects a paradigm shift—with both entities more systematically playing major roles in the preparation of teachers. Looking to the future, the increased role of districts is being institutionalized as the preparation of teachers has become a collaborative effort. The nature of teacher preparation within CSU has been dramatically changed, with wholly new commitments to a joint enterprise now found on the parts of school districts and campuses.

Creation of anchor school sites where a group of candidates all have their student teaching is an outgrowth of efforts to prepare candidates collaboratively with high quality. Anchor sites are characteristic of deep district partnerships and are likely to be found increasingly in the future at CSU campuses, with many campuses soon having a number of these models of clinical placements.

The success of the NGEI partnerships is dependent upon consistent collaborations that occur at multiple levels. In looking towards the future, it is important that local partnerships are projected that will continue to be broadly based, including university faculty and administrators and district administrators, specialists and mentor teachers (referred to alternatively as cooperating teachers, depending on partnership practices) working together.

The success of the NGEI partnerships is dependent upon consistent collaborations that occur at multiple levels.

The second KTE is collaboratively defining prioritized skills—the attitudes, knowledge and dispositions most vital to success of new teachers—and these too can be anticipated to be highly prominent in the future. These prioritized skills and the rubrics used to measure candidate progress towards them became a unified vision for the NGEI projects and served as a centerpiece for them. The campuses used the prioritized skills across many or even all of their programs, mapping courses and clinical experiences to them. They will continue to shape preparation of candidates within CSU.

The third KTE is preparation through practice at school sites supported by thoroughly prepared mentor teachers. Candidates had opportunities to gain fluency with prioritized skills at these clinical settings. The clinical experiences included multiple opportunities to observe and demonstrate proficiency with prioritized skills. Mentor teachers helped to co-construct the prioritized skills and, in some cases, their rubrics and observation instruments, and their training included and will continue to include using each of these. Recognition of mentor teachers, including compensation for their roles, has long been a concern of CSU campuses. The case for such recognition was consistently evident in the NGEI. Looking forward, a stipend or other form of compensation will continue to be recognized as a significant need as teacher preparation and its financing is discussed.

The fourth KTE is creating a culture of feedback for teacher candidates that is data driven. It takes shape through observation instruments that have calibrated rubrics that are used in an ongoing coordinated feedback process involving CSU faculty, supervisors, coaches and teacher mentors. The observation instruments and calibrated scoring rubrics have been adapted for use across campus teacher preparation programs, going well beyond the initial NGEI cohort, and it is clear that they will continue to play an important role on campuses going forward.

The fifth KTE is using data to measure progress toward proficiency as well as gaps in prioritized skills and employing the principles and methods of improvement science to continuously strengthen the quality of educator preparation. Campuses used data on an ongoing basis in a continuous improvement design and found the results to be highly valuable and thus more of this data-based improvement model is anticipated in the future, with facilitation by the CSU Educator Quality Center (EdQ Center), using the new capabilities described below.

A significant new initiative is now underway to put actionable and timely data into the hands of CSU program stakeholders for the purpose of continuous improvement. The EdQ Center has received funding to integrate CSU educator preparation data and publish user-friendly displays using teacher preparation dashboards. CSU's goals for the project are to 1) increase access to system-wide data sources including employment and retention data, 2) improve the quality of educator preparation data available to campus programs and 3) promote system-wide common measures to facilitate collaboration across campuses.

Specialists from WestEd led capacity building for improvement science on campuses with large reform grants as well as a mini-grant program in improvement science for 12 additional campuses, discussed below, and an intensive year-long Improvement Research Fellowship for program teams at eight campuses. With leadership from WestEd, campuses participating in these activities used improvement science to develop, adapt and implement reliable exploratory processes. The campuses considered the methods to be exceptionally useful and, going forward, are expected to continue to use improvement science.

In the final year of the NGEI, improvement science mini-grants were made to 12 CSU campuses that did not receive large reform grants. With leadership from WestEd, the 12 campuses used a range of improvement science methodology to examine a teacher preparation process. Through the mini-grants from the S. D. Bechtel, Jr. Foundation, campuses explored a process related to one of the KTEs or to diversity in teacher recruitment. With a small investment, campuses were able to develop a deep understanding of a process and identify areas for improvement. Processes examined pertained to diversity of candidates, prioritized skills, mentor teacher selection and preparation, clinical placements and other areas related to KTEs.

The EdQ Center and WestEd have been working together to ensure that CSU educator preparation programs continue applying the principles and methods of improvement science. Reflecting their West Ed Improvement Science training and experience, the EdQ Center has been able to launch a new systemwide initiative called the Chancellor's Learning Lab for Improvement. It will support campus improvement teams to use Improvement Research to address a system wide goal to increase the diversity of CSU teacher preparation graduates by using the tools, mindsets and routines of improvement science.

Looking forward also entails recognizing the impact of other technical assistance experts that will have lasting effects. The National Center for Teacher Residencies advised the NGEI community on high quality clinical preparation and assisted interested campuses in moving toward residency programs. Some campuses were funded through the Commission on Teacher Credentialing to establish residency programs, and a commitment to residency programs exists on virtually all of the campuses that received reform grants from the S. D. Bechtel, Jr. Foundation. Looking forward, it is realistic to envision residencies becoming yet more prominent across CSU campuses.

TeachingWorks at the University of Michigan addressed a set of high-leverage teaching practices with the NGEI. In collaboration with TeachingWorks, "faculty fellows" learned practices that support teacher candidates to disrupt patterns of inequity in public education that they integrated into their own instruction. TeachingWorks also met with groups of fellows and candidates in summer institutes and with the entire NGEI community and had a marked impact in drawing attention to the need to focus on disrupting conventional patterns of inequity. There is significant CSU interest in supporting additional learning regarding these high-leverage teaching practices.

With a small investment, 12 campuses examined a teacher preparation process, deepening understanding of that process and identifying areas for improvement.

The CSU Office of the Chancellor hosted a series of webinars in the last year of the grant, emphasizing diversity, equity and inclusion. With support from the S. D. Bechtel, Jr. Foundation, it also created a Teacher Diversity Toolkit, a web-based tool that addresses diversity in recruitment and in teacher preparation practices. Looking forward, these tools will continue to be available and will help support effective strategies advancing diversity, equity and inclusion in educator preparation.

One of the most notable findings from the NGEI pertains to the efforts and successes in scaling and sustaining the transformations achieved. Continued substantial impacts of the KTEs and NGEI are anticipated due to the work of campuses in these two areas. Scaling up has occurred on each of the reform project campuses. They have scaled up the KTEs by implementing them with other cohorts in the same program (i.e., multiple subject) with other programs (for example, single subject or special education), and with other school districts, school sites or classrooms.

One of the most notable findings from the NGEI pertains to the efforts and successes in scaling and sustaining the transformations achieved.

To sustain the NGEI programs, campuses envision continuing some NGEI roles of faculty and partners. Budgeting that supports these roles and the programs' operations has been planned. On some campuses, one or more faculty committees have been established to support these efforts.

The KTEs will continue to be sustained in a number of ways. Partnerships with districts are the starting point for sustainability. Prioritized skills are essential in campus sustainability efforts as are high quality clinical sites for candidate placements. Observation and evaluation tools are deeply embedded in the programs and their sustainability. Use of data by all campus teams to measure candidate progress—facilitating regular, evidence-based high-quality feedback to candidates—contributes to sustaining the Key Transformation Elements. Trained faculty, supervisors, coaches and mentor teachers also help sustain innovative practices. New norms for data collection, analysis and usage are, additionally, playing an instrumental role in sustaining the NGEI.

In sum, the outstanding vision of the NGEI has had lasting effects, with its practices being scaled up and sustained and with the program having had an impact on CSU campus practices and culture. Due to these scaling and sustaining activities, the future will feature continued implementation of the NGEI after funding from the S. D. Bechtel, Jr. Foundation is no longer present. The result will be continuation and further impact of the NGEI's exceptional set of reforms on teacher preparation into the future.