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# Strengthening the Data Use and Continuous Improvement Capacity of Teacher Preparation Programs

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The New Generation of Educators Initiative (NGEI) at California State University (CSU), funded by the S. D. Bechtel, Jr. Foundation, sought to strengthen the teacher preparation system in California so that new teachers would enter the workforce prepared to implement the Common Core State Standards and the Next Generation Science Standards. From January 2015 through June 2019, NGEI provided grants to CSU campuses and their district partners to improve their teacher preparation programs. The foundation developed a theory of action to guide reform that focused on five Key Transformational Elements: partnership with districts, prioritized skills, practice-based clinical preparation, formative feedback on prioritized skills, and data-driven continuous improvement.

WestEd and SRI International conducted a formative evaluation of NGEI implementation and outcomes at the grantee sites, and delivered technical assistance to strategically support data-driven program reform efforts.

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# Overview of New Generation of Educators Initiative

Educators and policymakers across the United States recognize a growing urgency to improve the nation's systems of teacher preparation.<sup>1</sup> Schools in every state need teachers who are prepared to teach diverse student populations and to meet new and rigorous academic standards, but existing research demonstrates that there is variation in how teachers are trained for the profession, both within and across programs.<sup>2</sup> In the face of nationwide teacher shortages, better-prepared teachers are more likely to stay and thrive in the profession.<sup>3</sup>

Research on university-based teacher preparation programs, which prepare the majority of the nation's teachers, identifies key aspects of these programs that need strengthening in order to prepare teachers to teach to rigorous standards and engage in more student-centered, culturally responsive, pedagogical practices.<sup>4</sup> For one, programs can clearly define a set of prioritized skills that teachers must master to teach effectively. Next, they need to improve the quality, coherence, and consistency of both coursework and clinical experiences. Finally, they should provide opportunities for teacher candidates to practice in a clinical setting and receive high-quality feedback on their teaching.

The S. D. Bechtel, Jr. Foundation ("the Foundation") and the California State University (CSU) system partnered to launch California's New Generation of Educators Initiative (NGEI) in an effort to support CSU teacher preparation program reform. CSU prepares the largest number of California's teachers, by far, and about 8 percent of teachers nationwide.<sup>5</sup> Launched in 2016, NGEI was a four-year, \$27 million initiative. It engaged 11 universities<sup>6</sup> throughout the CSU system to bolster their teacher preparation programs (TPPs) by enacting practice-based reforms (for an overview of each teacher preparation each program's partnership and reform activities, see Appendix A). Its vision was to increase the number of teachers who entered the profession prepared to deliver instruction aligned to the Common Core State Standards (CCSS) and the Next Generation Science Standards (NGSS).



NGEI's particular focus was on transforming the nature and quality of clinical preparation. To this end, NGEI brought together a group of core CSU deans and faculty, Foundation staff, and technical assistance providers who collaborated to develop a theory of action that would ground that transformation.<sup>7</sup> What emerged were five transformative elements that guided implementation of reforms across campuses (for more detail about the transformative elements, referred to within the NGEI community as the Key Transformational Elements, see Appendix B):

- Forming deep partnerships between CSU campuses and their partner school districts
- Collaboratively defining a set of prioritized skills that teachers must master
- Ensuring practice-based clinical preparation supported by high-quality mentors
- Creating a culture of formative feedback centered on prioritized skills
- Using data to drive continuous improvement

Throughout NGEI's implementation, WestEd and SRI International conducted an evaluation to help support continuous improvement and to provide a summative assessment of progress toward the five transformative elements (for more detail about our data and methods, see Appendix C). We report our findings in a series of four papers focused on lessons learned as participating campuses enacted reforms anchored in the transformative elements. The papers' topics include the following: (1) the system of supports to bolster reform implementation; (2) campus-district partnerships; (3) strengthening of clinical orientation; and (4) data use and continuous improvement. This paper focuses on the fourth topic, data use and continuous improvement.



# Introduction

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As efforts have mounted to reform how teachers are prepared for their profession, teacher preparation programs (TPPs) are increasingly focusing on expanding their capacity to use data for continuous improvement. That means using a disciplined methodology to solve problems as well as engaging the “front line” of users most directly experiencing the problem.<sup>8</sup> It means striving to improve how campus systems and their school district partners work together to support teaching candidates by developing, adapting, and implementing reliable processes to produce specific outcomes. It also means identifying and using multiple sources of data that not only measure outcomes but also regularly and frequently measure the effectiveness of the processes put in place.

Moreover, an orientation toward continuous improvement requires designating clear roles for programmatic improvement and establishing routines through which frequent use of data becomes the norm.<sup>9</sup>

TPPs are not typically organized to support a continuous improvement approach. Instead, the measures TPPs prioritize, the roles they have designated, and the organizational routines they have established tend to reflect an accountability orientation — a response to the requirements of an array of state, federal, and other entities<sup>10</sup> that hold TPPs accountable for their performance.<sup>11</sup> In pursuit of teacher education reform, these entities publicly assess, rate, and rank TPPs based on compliance with a range of standards, procedures, and outcome measures.<sup>12</sup> Over time, this has led TPPs to become reliant on accountability as a mechanism for achieving better results.<sup>13</sup>

Yet the data used for accountability generally does not provide sufficient information for continuous improvement. Nor does this data generally support continuous improvement, given that its current purpose is to hold programs accountable and influence policy decisions.<sup>14</sup> To be sure, certain outcome measures used for accountability can be useful for improvement purposes. For example, data about retention of a program’s completers in teaching jobs in high-needs schools could help drive attention toward gaps in performance that the program would seek to close through improvement efforts. But such information is complementary to, not a substitute for, data that is actionable, routinely and frequently collected, and related to key processes — in other words, data that can effect immediate and ongoing programmatic change.<sup>15</sup>

Recognizing the importance of continuous improvement, the New Generation of Educators Initiative (NGEI) supported the California State University (CSU) system to approach reform by building its continuous improvement capacity at both the campus and system levels and, in doing so, to improve its use of data.

At the campus level, the NGEI work focused on 10 CSU campus–district partnerships. The S.D. Bechtel, Jr. Foundation encouraged each partnership to routinely review data – from systemwide measures and from measures unique to each campus – to evaluate aspects of the teacher preparation experience and make changes as needed to ensure a higher-quality program and, thus, effective learning-to-teach experiences for candidates.

The NGEI grants also established new roles at each campus to lead continuous improvement – that is, to create routines to regularly review data on individual candidates’ progress toward competency in prioritized skills.<sup>16</sup> This regular review informed decisions about coaching and candidate support throughout the school year.

At the system level, the NGEI work strengthened the accessibility of data provided by the Educator Quality (EdQ) Center at the CSU Chancellor’s Office, notably improving accessibility of the systemwide annual survey data and completer employment data that the EdQ Center provides to all CSU TPPs.

Our evaluation identified four key levers that staff and leaders in TPPs used to move CSU’s TPPs toward a continuous improvement orientation:

1. Developing data sources that can inform improvement efforts
2. Delineating clear roles to support continuous improvement
3. Building an infrastructure for efficient data entry and analysis
4. Establishing a culture of improvement through routines for data review and use

While these levers are each discussed in turn, they are deeply interrelated. Routines for data use often require that roles be designated for who will be responsible for each aspect of the routine. Which measures are used to inform improvement efforts will often impact the nature and frequency of data review routines as well as which individuals will gather, analyze, and lead discussions around the given data.

# Lever 1: Develop Data Sources That Can Inform Improvement Efforts

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In a continuous improvement approach, it is critical to have access to data that can indicate gaps in performance on valued outcomes and also inform action to close those gaps.<sup>17</sup> Ensuring easy access to that data can increase practitioner awareness of the need for change and facilitate the use of data to inform change efforts.<sup>18</sup> Specifically, two key kinds of data need to be routinely tracked: outcome measures (To what extent is the program producing valued outcomes?) and process measures (How well are the underlying processes that drive these outcomes performing?).<sup>19</sup>

At the outset of NGEI, faculty and staff in CSU TPPs reported lacking easy access to outcome and process measures to guide improvement efforts. We next discuss the following efforts under NGEI:

- Expanding access to outcome data
- Developing data sources close to the processes to be improved

## Expanding access to outcome data

Data on valued outcomes allows program leaders to know how a system is performing overall and can highlight where there are gaps in performance on valued outcomes that need attention. Outcomes may vary for different TPPs or TPP systems and are likely to evolve over time, based on changing stakeholder priorities and knowledge.<sup>20</sup> A major NGEI outcome focus was teachers being prepared with key skills on day one of their teaching jobs. Another focus was the placement (and retention) of those teachers in NGEI partner districts. Additionally, over the course of the reform, the CSU system intensified its focus on the need to produce teachers whose races and ethnicities match those of the students they teach.

At the outset of NGEI, data about these key valued outcomes was limited — a common problem in teacher preparation institutions nationwide.<sup>21</sup> The CSU system had built some capacity to monitor outcomes via three annual EdQ surveys of completers, first-year teachers, and their employers. These surveys were designed to capture information on program experiences and on how well-prepared completers were for teaching.<sup>22</sup> But faculty and staff involved in NGEI reported many challenges related to the limited accessibility, usefulness, and quality of that survey data.

Each year, for example, the first-year surveys had response rates well below 50 percent, limiting their value.<sup>23</sup> The EdQ Center reported the survey's findings by compiling the data into campus-specific summaries in large binders delivered to education deans several months after the surveys closed. With the reports in hard copy, it was not possible to explore variation by subgroups (such as



by ethnic and racial groups) or by preparation pathways. The completer survey, meanwhile, typically had a response rate close to 80 percent, but the EdQ Center did not analyze the resulting data at the system level. Instead, campus programs could access their own raw data and conduct their own analyses and create visualizations if they chose to do so.

Under NGEI, the EdQ Center set out to revamp the dissemination, accessibility, and user-friendliness of its data. The EdQ Center conducted a months-long process, informed by stakeholders throughout the system, to develop a set of interactive dashboards released in December of 2018.<sup>24</sup> The dashboards made data from all three EdQ surveys accessible within one to two months, depending on the survey, and made analysis of trends by pathway and subgroup possible.<sup>25</sup> Through these actions, the EdQ Center expanded the number of users with direct access to the reports, from the 23 deans to more than 1,000 registered dashboard users, including faculty and staff at all campuses.<sup>26</sup>

To further encourage use of the data for continuous improvement — and to ensure that continuous improvement would be a central focus of its policies — the EdQ Center also adopted a comprehensive data governance policy (see Box 1).

## Box 1. Data governance policy to support continuous improvement

The EdQ Center adopted a comprehensive data governance policy that aims to bolster the system's continuous improvement orientation by maximizing access for stakeholders working to improve the TPPs. The policy intentionally minimizes the extent to which a given program's data is exposed to outsiders who would be using the data for accountability purposes, as the opening page on its dashboard website notes:

**The data system is designed specifically to serve educator preparation programs.**

It makes high-quality data accessible to all who need it to inform their program improvement efforts — including deans, associate deans, program coordinators, field supervisors, credential analysts, faculty, and staff.

**Dashboards are secure and private.** Campuses have access to their own data as well as aggregate data for the CSU system. Each campus decides how its data is shared within the CSU system.<sup>27</sup>

A continuing challenge is the persistently low response rates on the surveys of first-year teachers and their employers. Given this problem, TPPs at many campuses were limiting their use of these data sources, concerned about the validity of any claims derived from them. The EdQ Center is

continuing to explore new strategies for improving these response rates and, in turn, the value of these key sources of evidence.

Another problem prior to NGEI was CSU's lack of a central source of information on completers' employment or retention. The 23 TPPs in the CSU system had no comprehensive source of data on whether or where completers from those programs took teaching jobs, post-completion, and how long they stayed. Though data sharing agreements with individual districts allowed some programs to access this information, those agreements often existed for reporting purposes on external grants and, thus, ended when the grants ended.

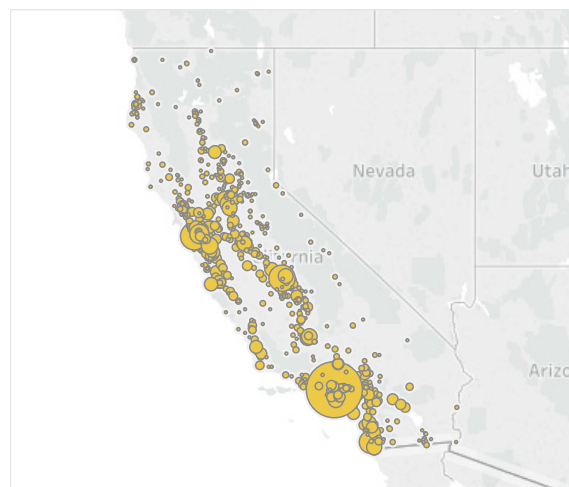
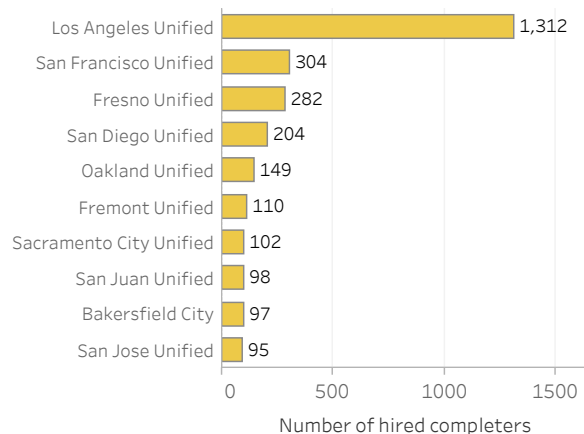
Under NGEI, the EdQ Center set out to resolve this problem as well. Over several years, the EdQ Center worked to negotiate a data sharing agreement with the California Department of Education (CDE) and the California Commission on Teacher Credentialing (CTC) to link data in the EdQ Center's annual datasets on teacher preparation completers with state public school employment records. By spring 2019, the EdQ Center and CDE had negotiated a first-ever data sharing agreement under which CSU would receive individual-level employment data on CSU completers teaching in California public schools. It has allowed the EdQ Center to produce reports for every program, showing completers' employment and retention in teaching by program and by key subgroups (see Exhibits 1 and 2 for examples of reports).<sup>28</sup>

This data is enabling TPPs to answer critical questions about performance on the valued outcomes, including: What proportion of our completers take jobs in California public schools, and how long are they staying in those jobs? In what districts and types of schools do our completers take jobs? How well do they mirror the racial and ethnic populations in those districts? Armed with clear answers, leaders are taking action to adjust system processes to improve outcomes (see Box 2).

## Exhibit 1. CSU employment report

Where are teaching credential candidates from the CSU system who completed their program in 2014-15, 2015-16, or 2016-17 employed?

### Top districts

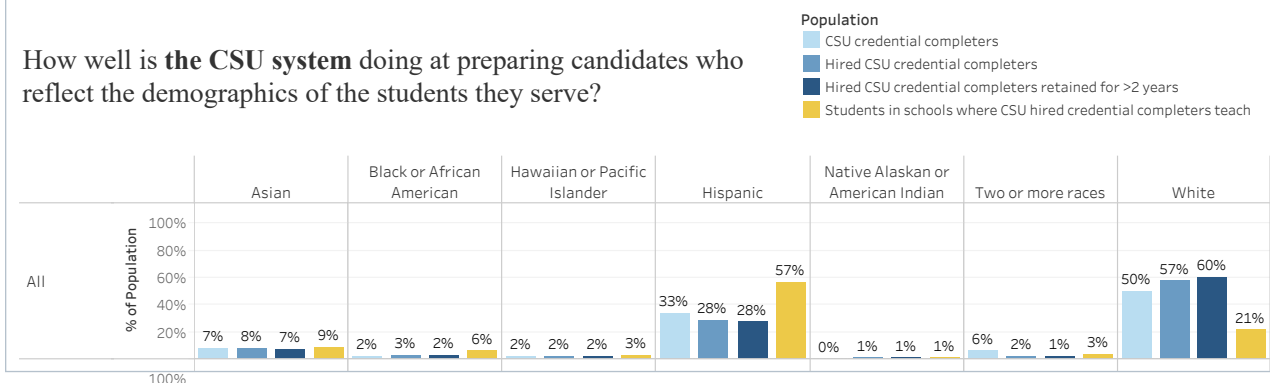


### Notes

1. The percentage of completers employed in California public schools as a teacher of record within one year of completion is calculated based on completers from 2014-15, 2015-16 and 2016-17, looking at employment data from 2015-16 through 2017-18.
2. The percentage of completers employed in California public schools as a teacher of record within three years of completion is calculated based on completers from 2014-15, looking at employment data from 2015-16 through 2017-18.
3. The percentage of those who find employment in California public schools as a teacher of record who stay employed there for at least 2 subsequent years is calculated based on completers from 2014-15, looking at employment data from 2015-16 through 2017-18.

## Exhibit 2. CSU demographic employment report

How well is the CSU system doing at preparing candidates who reflect the demographics of the students they serve?



## Box 2. New EdQ reports support continuous improvement

Since 2018, CSU system leader Marquita Grenot-Scheyer had been working with colleagues in the Chancellor's Office and consulting with several education deans about a systemwide improvement effort that would set a goal of increasing the diversity of TPP candidates. Those efforts were bolstered in summer 2019 when the EdQ Center shared employment and demographic reports with all education deans, giving them data comparing the race/ethnicity of completers with that of the students in the school districts where the completers took jobs.

The data provided concrete evidence of real gaps in the proportions of completers of color versus students of color in the districts where they worked. As the deans pored over the reports at their quarterly meeting, they became motivated "to roll up their sleeves," said Grenot-Scheyer. The resulting momentum led to the launch of the Chancellor's Office Learning Lab, a cross-campus network that supports campuses to produce completers better matched demographically to the California public school students they will teach.<sup>29</sup>

Systemwide sources of data are also useful in helping identify program strengths and weaknesses. To encourage programs to use data from all available sources for program improvement, the EdQ Center has developed a variety of data use supports, including a fellowship for data professionals on campuses<sup>30</sup> and data coaching for deans and associate deans.

These efforts represent significant steps in making data about valued outcomes available to program leaders, faculty, and staff at CSU. That said, significant work remains to be done. As noted previously, for example, the EdQ Center is working to improve the low response rates on its first-year surveys. Further, the data sharing agreement is currently between CDE and CSU; it does not yet include CTC. As a result, CSU lacks unique identifiers for matching program completers with employment data,<sup>31</sup> which compromises data quality. The EdQ Center is continuing to work toward a data sharing agreement that includes CTC, which will mitigate the problem.

Also, while some campuses are using classroom observation rubrics to summatively assess candidates' day-one skills toward the end of their programs, there is not an agreed-upon systemwide measure for determining whether completers have developed the essential skills to be day-one ready based on classroom observation.

Looking ahead, sustaining progress made through NGEI will depend on the support provided to key faculty and staff to engage in using these data sources to inform continuous program improvement efforts. Moreover, input from these key users needs to be reflected in ongoing efforts to improve the nature, data quality, and accessibility of the data.

## Developing data sources close to the process to be improved

While outcome measures are meant to gauge whether a TPP's reforms are achieving intended results, process measures yield insight into the performance of those parts of the system most consequential to bringing about intended results.<sup>32</sup> Process measures provide ongoing information about whether a TPP is on track to reach desired outcomes and where program changes might be made to better reach those outcomes. These measures then also signal whether changes made are making a difference.

To provide this information, process measures need to be closely connected to the processes to be improved and predictive of desired outcomes.<sup>33</sup> Useful process measures are also actionable, relatively easy to capture, and collected frequently enough to affect ongoing programmatic change.<sup>34</sup>

The process measure most central to the improvement work of almost all NGEI partnerships was **rubric-based observation ratings**. Systematically collecting and reviewing this data on an ongoing basis enabled TPPs to understand whether and how well candidates were progressing toward the acquisition of prioritized skills over the course of their preparation.

Prior to NGEI, many campuses lacked systematic ways to measure candidate progress toward important teaching skills, making it difficult to understand whether candidates were on track to develop these skills and to know when and where to intervene if they were not. Although university supervisors and mentor teachers often used observation checklists based on California Teaching Performance Expectations (TPEs), the checklists and the TPEs themselves reflected a common shortcoming of state standards frameworks<sup>35</sup> — they often didn't specify the observable behaviors that would allow campus-district partnerships to gauge candidate preparedness. Furthermore, observation data was often collected infrequently or irregularly and was not always available to all staff who were directly supporting candidates. In interviews and focus groups, candidates, staff, and mentor teachers alike reported challenges associated with the lack of shared understanding and instrumentation to inform a common and valid picture of candidate progress toward key teaching skills.

To lay the foundation for NGEI improvement work, the initiative required campuses and their school district partners to identify a set of prioritized skills and select an accompanying rubric designed to measure those skills. Partnerships were then expected to use this rubric to guide regular observations that included providing candidates with feedback "multiple times throughout the clinical experience."<sup>36</sup> (For more on the role of prioritized skills in NGEI reforms, see the third paper in this series: Torre Gibney, D., Rutherford-Quach, S., Hirschboeck, K., & White, M. E. [2020]. *Strengthening the clinical orientation of teacher preparation programs*. WestEd.)

Data from observations allowed partnerships to **track candidate progress toward prioritized skills** as well as to **better understand and adapt the processes through which candidates learned, practiced, and received feedback on those skills**. The rubric data was “instrumental to the partnership,” said one department chair who oversaw transformational NGEI reforms to her program.

NGEI partnerships used observation data for program improvement in three key ways: to inform direct support to candidates on a weekly or monthly basis; to guide programmatic changes, typically at annual or semester intervals; and to ensure observation frequency and quality on an ongoing basis (see Table 1).

At the individual candidate level, frequent, ongoing reviews of observation data enabled staff to flag candidates performing below expectation and intervene with supports. At the program level, in-depth analyses led to larger, more time-intensive interventions, such as working with faculty to redesign coursework to emphasize skills that candidates consistently struggled with. In many cases, observation data raised questions about possible system breakdowns that needed to be addressed — for example, why aren’t mentors or supervisors conducting observations as frequently as desired? In some cases, the data prompted changes, such as adding “next steps” to observation forms to see if that led to more actionable supervisor feedback. Such changes were themselves then monitored by using the observation data.

**Table 1. Examples of how NGEI partnerships used observation data for improvement**

Informing direct support to candidates
<p><b>Question:</b> Are individual candidates progressing as expected?</p> <ul style="list-style-type: none"> <li>• <b>Approximate Frequency:</b> Weekly (ongoing)</li> <li>• <b>Observation Data Focus:</b> Candidates whose observation scores are lower than expected on a particular skill</li> <li>• <b>Actions Informed by the Data:</b> Flagging and offering targeted supports to struggling candidates</li> </ul>
<p><b>Question:</b> Is the cohort as a whole progressing as expected? Where is the cohort struggling?</p> <ul style="list-style-type: none"> <li>• <b>Approximate Frequency:</b> Monthly</li> <li>• <b>Observation Data Focus (for each prioritized skill):</b> Averages and standard deviation across a cohort; percent performing unsatisfactory, proficient, or distinguished; increases or decreases in candidate observation scores over time; skills with the highest and lowest scores</li> <li>• <b>Actions Informed by the Data:</b> Adapting trainings to help mentors and supervisors support candidates around skills they are struggling with; reinforcing areas of struggle through coursework</li> </ul>



### Guiding programmatic changes

**Questions:** How should we adapt our coursework next semester/year? What prioritized skills should we make a programmatic focus?

- **Approximate Frequency:** End of semester or end of year
- **Observation Data Focus:** Observation scores for prioritized skills that are consistently below expectations across a large number of candidates
- **Actions Informed by the Data:** Identifying targeted, prioritized skills for cross-program focus; designing trainings to increase mentor and supervisor understanding of prioritized skills and how to support candidates around specific prioritized skills in clinical placements

### Ensuring observation frequency and quality

**Question:** Are observations taking place at the desired frequency?

- **Approximate Frequency:** Weekly (ongoing)
- **Observation Data Focus:** Number of observations for each candidate; comparisons of observation frequency across supervisors/mentors
- **Actions Informed by the Data:** Sending reminders around expected observation schedule in mentor or supervisor meetings; following-up with remiss mentors or supervisors; designing processes to increase observation frequency or the submission of observation data

**Question:** Are observations taking place at the desired frequency?

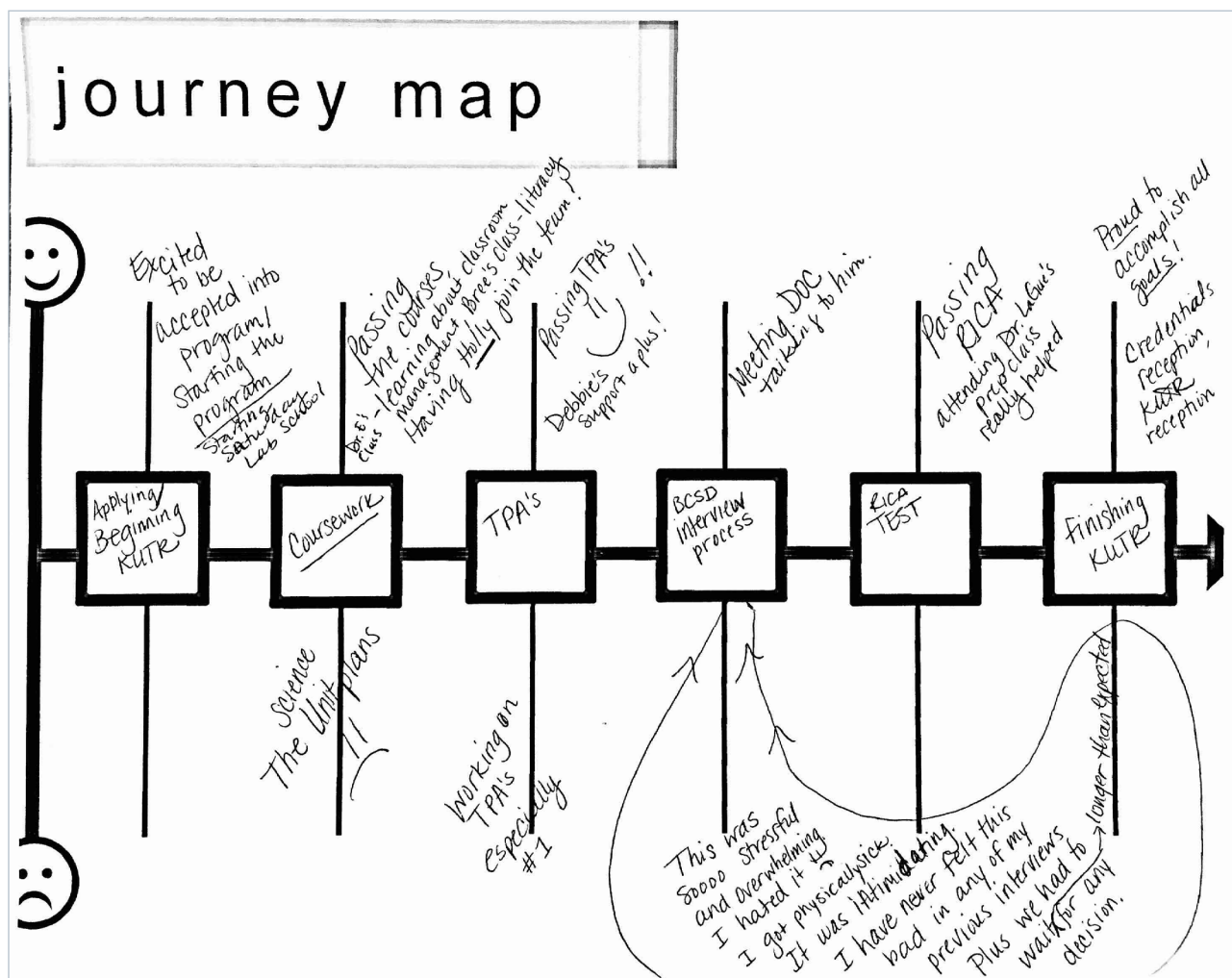
- **Approximate Frequency:** Once enough observations take place to draw inferences from the data, but early enough to provide timely interventions
- **Observation Data Focus:** Average scores across observers and distribution of scores by observer; variation of scores across candidates; prioritized skill focus of observations; analysis of qualitative feedback tied to observations (Is feedback actionable, specific, and rooted in evidence?)
- **Actions Informed by the Data:** Designing mentor and supervisor trainings around norming, calibration, and high-quality feedback; developing observation forms and protocols to encourage high-quality feedback

To add depth to observation data and to better understand why candidates were or were not progressing toward prioritized skills, some partnerships developed additional data sources that complemented observation data. Several program leads emphasized that reviewing multiple data sources in parallel yielded deeper insights into how key processes were unfolding and enriched data conversations with the perspectives of multiple stakeholders. For example, one campus noted the value of supplementing observation data by surveying candidates and mentor teachers each semester to understand candidates' clinical experience. As issues arose – for example, if candidates reported that they were not getting sufficient opportunities to practice teaching skills – the program leads adapted survey questions to help them understand why this might be the case and whether mentor teachers perceived similar issues.

Other campus teams worked with candidates to create candidate “journey maps” that provided a visualization of candidates' actions, perceptions, feelings, and frames of mind at key points as the program unfolded<sup>37</sup> (see Exhibit 2). Getting the candidates' perspectives, said one program lead, is “giving us a lot of the insight we need to understand other pieces of data, like the signature assignment data or the observation data, and to understand the systems around [the data sources].”

Candidate journey maps also provided insight into significant stressors that faculty and staff might be unaware of. For example, one faculty member was surprised to learn of the high incidence of trauma in candidates' personal lives that affected both their residency experience and their overall well-being, including loss of family members, separation from children, and domestic violence. “Now I check in and talk about well-being every week. I provide them with the flyers [for counseling services] and different resources they can use on campus and the community. . . . I encourage them to speak up and come to me, and I can point them in the right direction.” This faculty member reported that sharing this experience with the rest of the faculty led others as well to become more attuned to candidate well-being.

**Exhibit 3. Using journey maps as a data source to understand the candidate experience**



NGEI leaders at nearly every campus pointed to the rubric as a reform element highly likely to be sustained by the partnerships. To ensure its sustainability will require that partnerships institutionalize the roles and routines that support the collection, analysis, and use of rubric-based observation data. Similarly, routine use of data from other process measures needs to be institutionalized to allow faculty and staff to monitor the quality and reliability of essential components of their TPPs – including the partnership itself, coursework/clinical alignment, and mentoring.

Several programs have established new approaches to process measurement relevant to these components and have learned from one another as they've collected, used, and refined these types of data. But the mechanisms by which programs will sustain these approaches long term and continue to learn from one another are unclear. With this emerging system of measures being

a fundamental ingredient for continuous improvement of TPPs,<sup>38</sup> the CSU Chancellor's Office can play a continuing role in institutionalizing and scaling it.

## Lever 2: Delineate Clear Roles to Support Continuous Improvement

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Becoming a continuous improvement organization requires structural changes to facilitate development of a culture of open and honest conversations around data.<sup>39</sup> To become an organization where “improvement is everyone’s responsibility” often requires creating roles specifically designed to orchestrate development of skills, routines, and mindsets for ongoing collection, analysis, and use of data for improvement. While most campuses had assessment coordinators or data managers who managed data for compliance and reporting before NGEI work began, few had roles designated specifically to organize, share, and facilitate discussions around data for programmatic improvement, let alone to coordinate testing and implementing change efforts that may result.

With NGEI funding, each campus established a continuous improvement lead (CIL) position. We next discuss the importance of the following efforts under NGEI:

- Assigning a role to lead continuous improvement
- Making use of other data support roles

### Assigning a role to lead continuous improvement

The CIL was a formal role designated by each campus, as required by NGEI, to be a key member of the project team. The CIL drove and organized processes around data collection, analysis, and use. The grant required that each CIL work at least 35 percent in this role to coordinate improved data use – that is, to ensure that appropriate data was identified, interpreted, and used on a frequent and ongoing basis to inform NGEI implementation. Under the grant, the CIL needed to be someone who already served in an existing position that involved key aspects of the NGEI work. For all but one of the campuses, the person chosen for the CIL role was a faculty member.

Most campuses reported that the CILs, as intended, purposefully used data to drive ongoing programmatic improvement and spearheaded the use of data for continuous improvement. With regular coaching and support from the WestEd and SRI NGEI team, they homed in on focal processes to be addressed through NGEI, were responsible for organizing the process of collecting and analyzing data, and facilitated the frequent use of data for improvement. At many campuses, the CIL also regularly led conversations around data with faculty and program staff.

The CILs also often worked collaboratively with those in other roles (e.g., data managers, university supervisors, coordinators) designated to engage with data on processes central to improvement efforts. In the system developed for candidate observation, for example, one CIL worked with supervisors to input the data collected during observations of candidates in clinical placements into a database; with the data manager to manage the database; and with an assessment coordinator who would download, anonymize, and analyze the data and put it into visual formats. This process then enabled the CIL to drive conversations around data use with faculty in quarterly meetings, using a standard data discussion protocol. (See Box 3 for another, more detailed example).

### Box 3. CSU Fullerton distributed responsibility for data routines

Throughout NGEI, the CIL at CSU Fullerton distributed responsibility for collection, analysis, and use of rubric data across multiple individuals. This approach had two benefits: It helped even out the workload for those involved, and it got more stakeholders invested and involved in the rubric data.

University supervisors and clinical coaches kept track of rubric-based feedback on each candidate across observations and used that data during individual coaching sessions to identify next steps for candidates. The CIL worked with the NGEI lead and the project coordinator (a staff position) to create a process for data collection and design a spreadsheet into which rubric data was entered for analysis. The CIL and the NGEI lead worked collaboratively on data analysis, with the CIL sometimes taking a deeper dive. Results were reviewed by the project's full NGEI leadership team, which would determine whether additional professional learning should be provided to supervisors and clinical coaches.

For example, after learning that candidates were being scored low on student engagement, an indicator of student persistence, supervisors and coaches were trained in what high-quality examples of student persistence look like and how to give candidates high-quality feedback in that area.

NGEI project leadership reviewed the data every two weeks during meetings attended by the program leaders and department chairs from across the TPP's credential programs.

While CILs and NGEI teams expressed interest in continuing to focus explicitly on data use and continuous improvement, these efforts will only be sustained to the extent that the work is built into specific TPP roles and positions. At the end of NGEI, plans were in place to include continuous

improvement duties in the following types of positions going forward: faculty, department chairs, program coordinators, and district partnership coordinators. One campus had formed a continuous improvement committee comprising faculty and staff.

Designating a person to lead and orchestrate data and improvement routines can help ensure their sustainability, especially given the often-fragmented nature of TPPs and the inherent difficulties of data collection. Many CILs hoped there could continue to be a designated CIL position but reported uncertainty about how they might continue in the role without the grant's support. A few campuses were able to secure other grant funding for ongoing work, if not specifically for continuing the CIL role. Meanwhile, the EdQ Center launched a network in summer 2020 for all former NGEI CILs and others who have been involved in continuous improvement work, including WestEd's Improvement Research Fellows, and NGEI "mini-grants" teams. (For more detail, see the first paper in this series: White, M. E., Milby, A., Hirschboeck, K., Tejwani, J., Torre Gibney, D. [2020]. *The NGEI approach to improving teacher preparation in the CSU through a system of supports*. WestEd.) The new network resulted from a months-long planning effort to test and prototype the approach.

## Making use of other data support roles

To oversee and facilitate every step, from the process of data collection to its ultimate use, the CIL required the support of those in complementary data support roles. These included assessment coordinators and data managers, the latter often responsible for facilitating data collection (including administering surveys) and analysis. Prior to NGEI, the purpose of data-related roles was often to manage accreditation tasks and comply with the reporting requirements of state agencies seeking to hold TPPs accountable. With NGEI, these roles at half the campuses shifted to include working with the CIL to facilitate continuous improvement and provide support such as basic analyses of incoming data needed by program coordinators (see Box 4 for an example).

### Box 4. CSU Fresno appointed a data management system coordinator

In 2016, CSU Fresno implemented a new comprehensive candidate data management system, called Tk20 by Watermark, to facilitate improved data storage, observation processes, and analyses of observation feedback, all of which were previously done using paper forms. To ensure the success of this system's implementation, CSU Fresno created a position that would coordinate the day-to-day logistics, including assigning university supervisors to observe teaching candidates and facilitating the input and analysis of observation data (surveys, field notes, and rubric scores) and videos.



Initially, the role focused on identifying key data to gather and include in the system and helping to determine how best to use that data for program improvement. It involved addressing training schedules and determining how implementation of the new system would impact different candidate cohorts and school district partners. Over time, the coordinator developed an efficient routine for pulling and formatting data on a regular basis and began training faculty, staff, coaches, and candidates on how to use the data. At the program level, the coordinator worked with the CIL and a cross-role data team to determine how the data would inform programmatic improvements and clinical coaching meetings.

The coordinator left the university during the course of the grant, a departure that the NGEI project team believed significantly impeded the ongoing implementation and use of the data management system.

Most campuses that had a role akin to a data manager will continue to leverage this position to collect and analyze data for continuous improvement purposes. Documenting the aspects of these positions that support continuous improvement and building those responsibilities into formal job descriptions will help ensure sustainability of continuous improvement work despite inevitable staff turnover. One effort aimed at building sustainability and support for data-related roles at CSUs is the EdQ Data Professionals Community<sup>40</sup>, a year-long program that engages assessment coordinators and other data professionals across CSUs in cross-campus learning and connects them with each other to share common challenges and promising practices.

## Lever 3: Build an Infrastructure for Efficient Data Entry and Analysis

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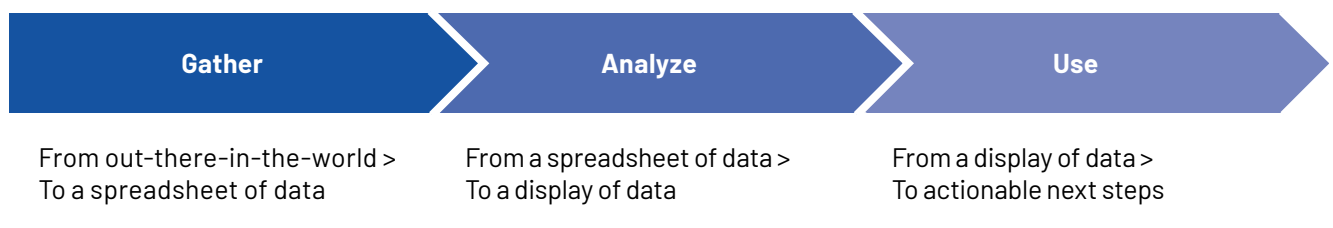
As NGEI partnerships shifted to an improvement focus, many began collecting new types of data, collecting data more frequently, and bringing together new stakeholders to review, make sense of, and use that data. These shifts pushed many partnerships to focus on streamlining systems and routines for data entry, analysis, and visualizations to ensure data was up to date, accurate, and easily accessible to those who would do the work of consuming and using it to inform program improvements. Such standard data routines are a key part of continuous improvement efforts.<sup>41</sup> In the following sections, we further discuss two key aspects of the partnerships' work in building and institutionalizing routines:

- Streamlining data systems and processes for data entry
- Making data accessible and analyzable

## Streamlining data systems and processes for data collection

In contrast to using data for accountability purposes, using data for program improvement requires frequent and ongoing data collection and analysis.<sup>42</sup> However, at the outset of NGEI, partnerships often struggled with inefficient data collection and management processes. To remedy the problem, many partnerships developed new data collection, storage, and management processes, which provided the necessary foundation for the generation of consistent, reliable data on a regular basis to facilitate the ongoing analysis and use of that data for program improvement (see Exhibit 4).

### Exhibit 4. Processes for moving from data to useful information



As NGEI partnerships began carrying out regular observations with newly adopted classroom observation rubrics and generating data around candidate progress toward prioritized skills, most found they lacked efficient tools for collecting and inputting that observation data. In the past, sites relied on manual, handwritten observation forms that supervisors submitted to program leadership. These were rarely used because of the time it would take to consolidate, review, and analyze the data. As a result, many teams found themselves relying on individual conversations with supervisors as a window into candidate progress.

To enable more effective use of observation data, a number of partnerships developed automated systems for entering the data – for example, through Microsoft Forms or Google Forms – and for pushing observation data into a spreadsheet or database that could be easily pulled for analysis later. One site addressed supervisor uncertainty around what fields to include in observations (and avoided data entry error) by creating a form with drop-down fields that supervisors could access through a portal. Supervisors could then also review and edit data after entering. New data collection systems also pushed some sites to rethink the fields they included in their forms to yield more useful analysis later. For example, one partnership added a field indicating whether a candidate was part of the partnership’s residency program, a piece of information that would help with comparisons across their two models of candidate preparation.

Partnerships also developed formal protocols to make sure observers submitted high-quality data on time. For example, one partnership noticed that while the program generated plenty of data, observation reports were often omitted, mislabeled, or duplicated, signaling that the observation process — pivotal to supporting candidates' progress in mastering prioritized skills — was inconsistently implemented. Taking a closer look, one NGEI team discovered that mentor teachers often waited until after the observation to type up handwritten notes. This caused a lag in when the faculty and staff received data for analysis and, importantly, when candidates received feedback on their practice.

To address these issues, the team created a protocol that clarified and standardized the observation process and served as a guide for how to document observations, how quickly to provide feedback to candidates, and what to include in observation reports. The protocol, said the CIL, “challenged the mentors to type as they go. We want that feedback conversation [with candidates] to happen after school, not days later.” To ensure understanding and implementation, the team integrated training on the protocol into supervisor and mentor teacher professional development. These changes encouraged timely feedback conversations with candidates and kept observation data up to date.

Box 5 describes how CSU Bakersfield combined frequent observation measures, an efficient data-entry and storage system, and a process for generating and analyzing user-friendly data reports to support the ongoing improvement of teacher candidates.

## Box 5. Streamlining processes for observation data collection and analysis at CSU Bakersfield

The Kern Urban Teacher Residency (KUTR) at CSU Bakersfield has developed an observation tool that prioritizes the skills outlined in the Danielson framework.<sup>43</sup>

Following each candidate observation, the university supervisor, mentor teacher, or district coach/instructional specialist who conducted the observation entered the data into an online form to capture the teacher candidate's performance on each of the skills. The entire team had instant access to the data file, and the CIL, the KUTR coordinator, and the university supervisor reviewed the data daily. In addition, mentors and TPP faculty discussed this data in monthly mentor meetings, where they looked at trends and identified supports for candidates. The team also provided the data to district instructional specialists, to keep them informed about the progress of the teacher candidates in residencies in the district.

During each of these reviews, CSU and district staff consider how many residents have been rated “basic” or “unsatisfactory” on a given skill. The reporting format highlights any “basic” or “unsatisfactory” rating in red, allowing the KUTR coordinator

and the university supervisor to easily identify low ratings and provide interventions as necessary. “Almost daily, I scroll through and look for ‘basics’ and ‘unsatisfactories’ to understand what is going on in the classroom,” said the university supervisor. “Especially if it is ‘unsatisfactory,’ we step in with individualized support and improvement plans for the resident. We also look at the patterns, because if we see one ‘unsatisfactory’ score, there will be more residents with those scores.”

However, implementing these new systems brought new challenges. Partnerships found that it took time for supervisors and mentors to become accustomed to using the technology involved in new data collection processes. At one partnership, where supervisors had been accustomed to jotting notes and formally writing up the observation later, supervisors were offered individual coaching wherein they could practice entering observation notes into their online platform in real time during mock observations. Another site built training into monthly mentor meetings, allowing mentors to practice entering data into new observation forms and also to see the reports generated on the back end using their data. Team leaders credited this training for the increase in mentors’ use of the forms the following year. Partnerships that successfully implemented these new systems and processes took an iterative approach, actively troubleshooting and revising forms and processes on an ongoing basis.

## Making data accessible and analyzable

The amount of data generated by a TPP can be overwhelming. Over the course of the NGEI grant, several partnerships developed processes for transforming raw, inputted data into formats that could be regularly synthesized and analyzed by faculty and staff for actionable insights.

A number of partnerships first set out to develop systems for storing and managing data by using data management systems like Tk20 by Watermark, which allowed data to be easily downloaded into analyzable spreadsheets. Others set up Google spreadsheets to serve a similar function. From there, program staff could generate graphics, tables, or reports that could inform their analysis and decision-making. At one partnership, the CIL pulled data on a monthly basis and generated pie charts to show the percentage of students scoring basic, proficient, or advanced on the dimensions of the program’s rubric that were the focus for that month. At another partnership, the CIL managed a separate spreadsheet that compiled the qualitative evidence statements for each observation indicator, painting a richer picture of candidate progress around prioritized skills.

As programs develop systems for pulling and analyzing data, it can be helpful to have those who will ultimately use the data identify which data is most useful, when this information should be made available to best inform program improvements,

**As one NGEI lead emphasized, “All that data is so accessible to us because we had a hand in shaping the look and feel of it.”**

and what types of data displays will be most helpful to the program staff ultimately charged with analyzing and using the data to make decisions. This kind of direction from the faculty and staff can help data managers strategically develop systems to provide the team with the most relevant data, organized and displayed in the most useful ways. As one NGEI lead emphasized, “All that data is so accessible to us because we had a hand in shaping the look and feel of it.”

Box 6 details the process CSU Chico developed to efficiently generate observation data displays.

## Box 6. Creating automated visualizations of observation data at CSU Chico

Before NGEI, CSU Chico relied on manual efforts to compile, analyze, and synthesize observation data. With the advent of NGEI, the Chico team adopted the TNTP Core Teaching Rubric<sup>44</sup> and opted to work with WestEd to develop more efficient ways to manage its rubric-based observation data. The goal of the collaboration was to create a visualization dashboard that would display observation data in meaningful ways and do so much sooner in the semester than the existing end-of-year review cycle. To this end, the team developed the following process:

1. **Enter observation data.** Supervisors enter observation data into a Google Form.
2. **Send data automatically to a destination spreadsheet.** The spreadsheet allows program staff to view the compiled observation data across candidates. Data is organized in columns, according to the order of questions on the form.
3. **Transform data.** Once the observation data is compiled in the spreadsheet, program staff can manipulate it, sorting, for example, by round of observation or candidate name. In addition, other features make it easier to create visuals based on that data.
4. **Create graphics and visuals based on the data.** After some manipulation in the destination spreadsheet, staff can create a set of graphs and charts for analysis.
5. **Copy visuals to Google Slides for review.** The graphics are copied and pasted into a shareable slide platform, which can be easily refreshed as new data is inputted into forms.

The Chico team developed several types of data displays to understand candidate progress along key dimensions of the program’s rubric: Culture of Learning (COL), Essential Content (ES), Academic Ownership (AO), and Demonstration of Learning (DL). **Each display type could be customized to show the progress of the cohort**

**as a whole or that of individual candidates.** The team could also adapt the displays to show observation data for individual subjects (e.g., math, science, or English language arts).

For example, tables, such as the example in Figure 1, could be used to show the average score across a cohort of candidates according to dimension (indicated across the top row) and observation round (indicated in left-most column). Scores were color coded according to where this average was on the rubric's 1–4 scale, with lower scores appearing in red or orange, middling scores in yellow, and higher scores in green. The average score on a particular dimension across all observation rounds was tabulated in the bottom-most row.

**Figure 1. Example of data table developed by Chico team**

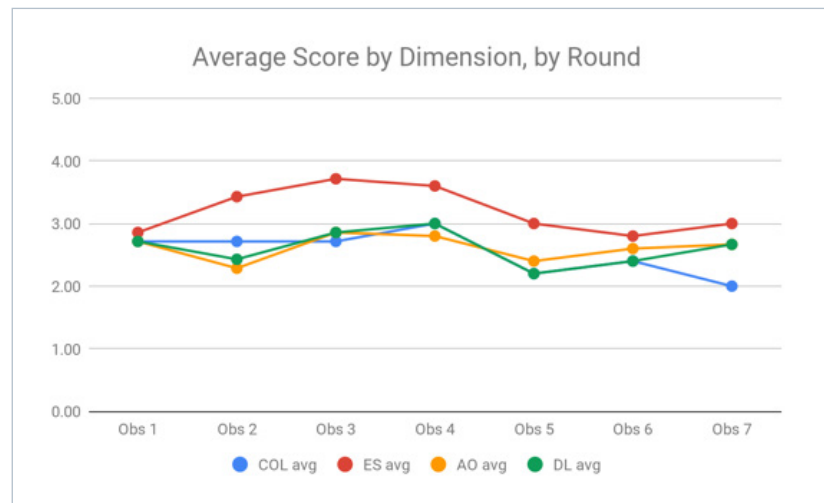
	COL avg	ES avg	AO avg	DL avg	N
Obs 1	2.71	2.86	2.71	2.71	8
Obs 2	2.71	3.43	2.29	2.43	8
Obs 3	2.71	3.71	2.86	2.86	7
Obs 4	3.00	3.60	2.80	3.00	6
Obs 5	2.20	3.00	2.40	2.20	5
Obs 6	2.40	2.80	2.60	2.40	5
Obs 7	2.00	3.00	2.67	2.67	3
<b>Average</b>	2.59	3.23	2.62	2.62	

Source: CSU Chico

Run charts, such as the example in Figure 2, could be used to show scores by dimension and by observation round, with each dimension represented by a different color. This allowed viewers to easily track and compare changes in the average observation score for each dimension over time.



**Figure 2: Example of run chart used by Chico team**



Source: CSU Chico

NGEI partnerships cited clear, well-understood processes for when and how to observe candidates, give feedback, and submit observation ratings as an important part of embedding improvement in the standard day-to-day operations of TPPs. Faculty and staff acknowledged challenges, however, in establishing and sustaining these routines. It took time, for example, for routines to become institutionalized. One partnership reported greater uptake of new observation routines in their second year of use, once mentors and supervisors had become accustomed to the new way of doing business. And a common challenge was successfully encouraging broader use of the observation protocols and data dashboards across the TPP – that is, beyond a small group of stakeholders who were closely connected to the NGEI reforms.

## Lever 4: Establish a Culture of Improvement Through Routines for Data Review and Use

Using data for program improvement depends not only on the regular collection of high-quality data and processes for making that data accessible and analyzable but on establishing routines to review and make sense of the data.<sup>45</sup> Establishing such routines often requires a cultural shift as programs reorient away from data use as the responsibility of a single individual or team to instead understanding data use – and learning from data – as a collective responsibility shared across many stakeholders.<sup>46</sup>

To build routines around data review and use, programs focused on:

- bringing in relevant stakeholders to review and make sense of data;
- timing the review of data to align with when that data could best be applied to program improvement; and
- facilitating discussions among stakeholders to support data discussions centered around program improvement and decision-making.

## Including relevant stakeholders in data discussions

Like most TPPs, NGEI programs had a range of stakeholders situated to make unique contributions to the analysis, review, and use of data for program improvement. These included district partners, program leadership, program coordinators, faculty, supervisors, and mentor teachers. Over the course of NGEI, a number of programs made concerted efforts to include these stakeholders in the regular review, analysis, and use of data.

Core program staff — typically the NGEI program lead, the CIL, and sometimes a data manager — were usually those closest to the data. At many sites, they made an effort to review observation data and regularly monitor candidate progress. These core program staff also devoted substantial time to setting up data conversations with other stakeholders, making sure to consider the data relevant to these stakeholders' spheres of influence, the questions the data would help these stakeholders answer, and the best format for presenting data and structuring conversation.

For example, across several sites, core program staff shared observation data in mentor teacher meetings to help mentor teachers understand where candidates were struggling so they could focus their mentoring on particular prioritized skills. Similarly, some sites also shared observation data in supervisor trainings to help supervisors understand where to focus candidate observations and feedback. Several programs worked to make data review a regular part of faculty meetings, giving faculty the opportunity to discuss how university coursework could better support candidate acquisition of prioritized skills and reinforce clinical practice.

Some programs used review meetings to bring together stakeholders who might not otherwise interact. For example, one program occasionally structured its monthly faculty meetings to overlap with supervisor meetings, so that they could, as a group, identify and compare trends in candidates' performance, in both the classroom and clinical placements. Another program invited multiple-subject faculty to a single-subject faculty meeting to foster a cross-program conversation around edTPA data.<sup>47</sup>

Most programs encountered challenges as they worked to make sure the right stakeholders were present and engaged during data discussions. For example, many CILs worked to incorporate data review and discussion into pre-existing, regularly scheduled meetings — a challenge because it

involved actively “making space” in packed agendas for data review and analysis. One assessment coordinator reported her approach to advocating for getting data discussion on agendas: “I spend a day pulling data that I think will have meaning for faculty and programs. And I put out an email saying, ‘I found this thing; can I join your meeting and talk about it?’” She noted that although everyone wanted to learn and to improve programs, she sometimes had to tie the need for data discussion to imperatives people were used to – for example, “I would pull the accreditation card.” Yet once discussion got underway, she said, “everyone is always excited. There was a meeting last week where everyone was burned out. We got into the small groups and looked at data, and they loved that.”

Occasionally, programs had to work to establish regular meetings for groups that were not accustomed to meeting at all – supervisors, for example. Some programs noted the challenge of increasing the attendance of adjunct faculty, who often taught during meeting times or were not required to attend regular faculty meetings.

Though sharing and reviewing data between the university and district partner was a core goal of NGEI, efforts to use data for program improvement largely took place within the university. “The continuous improvement was a university thing,” said one district staff member. “The district wasn’t a part of it. Different parties who participate [in data collection] don’t dig into differences in ratings. They just submit them to the university data system. I’m not sure what happens then.” While each partnership established data sharing agreements, participating campuses and districts did not typically develop processes that would enable them to share and use the data. One explanation for this disconnect was that data sharing agreements were not often actively used, due in part to concerns about privacy, lack of interest, or difficulty in accessing individual-level data.

Some partnerships did make progress on this front. For example, one campus shared candidate survey data on perceptions of mentoring quality with the district to help inform mentor teacher selection. In another partnership, the district coordinator played an active role in improving processes for collecting observation data and in jointly analyzing that data with the campus partner. (For more detail, see the third paper in this series: Torre Gibney, Rutherford-Quach, Hirschboeck et al. [2020].)

## Attending to the timing and frequency of data review

Many program leads indicated that, prior to NGEI, data analysis occurred too infrequently or too late to be used for making meaningful changes. Sometimes the lag was due to infrequent data collection or inefficient collection or management processes. But many sites also found they needed to make adjustments to ensure frequency of data review.

For example, one site restructured its observation data routines so that rather than analysis at the end of the year or semester, as was standard before NGEI, program staff reviewed classroom observation rubric scores quarterly. This allowed staff to monitor candidate progress toward prioritized skills while there was still time to make needed adjustments to mentor teacher trainings or supervisor observation foci. Another program that used observation data to inform monthly mentor trainings developed a routine for reviewing that data one week before the trainings, giving the program leads enough time to adjust trainings in response to immediate resident needs. Yet another program shifted its program coordinators' biannual review of observation data from the beginning to the end of the semester, allowing them to use their analysis to make changes to coursework over the winter or summer break.

Explaining the value of more frequent data analysis, one CIL said, "Smaller, more rapid cycles of data analysis help us catch things that are not going smoothly early on. The challenge is not to quickly create a solution but to really sit there uncomfortably for a little bit." The "discomfort" often then prompted the group to examine additional data before moving forward with decisions.

## Facilitating data discussions

Besides increasing the frequency of data reviews and working to include the right stakeholders, NGEI teams found it critical to present the data in relevant and useful formats and facilitate discussions in ways that fostered trust and open sharing. Often, the groundwork was laid by working with a data manager to set up systems to allow stakeholders to efficiently access relevant data and to generate visuals that would prompt engagement in discussion (see the section "Make data accessible and analyzable," p. 24).

The ways in which programs structured and facilitated data conversations depended on their audience and the depth of analysis they expected that audience to engage in. Sometimes, this meant CILs carried out an in-depth analysis and then reported findings — for example, presenting to a leadership meeting or explaining to supervisors the rationale behind a decision about professional development focus. At other times, CILs and their teams worked to provide data representations "useful for the conversation," as one coordinator put it, and frame questions that would allow participants to generate their own conclusions and action steps.

Several sites reported using structured data discussion protocols that helped remove barriers to participation, moved discussions more efficiently, and encouraged participant interest in data by scaffolding the data discussion in an engaging and accessible way (see Box 7 for an example).

## Box 7: CSU San Luis Obispo develops a structured data review protocol

The team at CSU San Luis Obispo (SLO) appreciated the value of programwide, data-driven discussions but recognized that time constraints — especially during faculty meetings with packed agendas — called for keeping these discussions targeted and structured. To support time-efficient conversations that would also be engaging, thoughtful, and purposeful, the team blended data discussion protocols from the School Reform Initiative and the National School Reform Faculty. This adapted protocol helped participants home in on key takeaways from the data and discuss strategic next steps based on their analysis.

CSU SLO uses this protocol in quarterly program meetings (which include faculty and staff, who were integral parts of these discussions) to support the analysis of observation scores, edTPA results, quarterly focus group interviews, and more. It asks participants to engage in the five steps shown in Table 2 to collaboratively analyze the data reports generated by the assessment manager.

**Table 2. CSU San Luis Obispo structured data review protocol (informed by the School Reform Initiative and the National School Reform Faculty).**

Step	Questions	Timing
<b>1. Perspective</b>	Reflect privately on your preliminary thoughts about the data. What assumptions, predictions, questions, points of view, or goals are you bringing to our conversation today?	2 min. silent reflection, 3 min. discussion if needed
<b>2. Observations</b>	What quantities, numerical relationships, comparisons, patterns, or trends jump out at you? REMEMBER: Just the facts! Stop if you catch yourself using the following words: I think..., "Because...", "Therefore...", "It seems," or "Maybe..."	3 min. silent reflection, 7 min. discussion
<b>3. Framing</b>	What contexts, causes, or caveats might be important before we begin to analyze this data? What institutional changes or practices are relevant? What can this data tell us, and what can't it tell us?	5 min. discussion

Step	Questions	Timing
<b>4. Implications</b>	What good news is there to celebrate? What problems of practice does the data suggest? What are the possible explanations for the data? What might the data suggest about our impact?	10 min. discussion
<b>5. Follow-up</b>	Will further inquiry or exploration of this data meaningfully change our practice? If so, what follow-up is needed? How should this type of data and reporting be modified for the future?	5 min. discussion

As NGEI drew to a close, program leaders expressed challenges they anticipated may arise as they go forward. Because CILs or assessment coordinators often had to push for data discussion with stakeholders, there are concerns about whether these routines would continue absent these advocates. Related to the quality of the data, one program leader noted that a lack of variability in classroom observation or edTPA scores made it difficult to glean useful insights. (For more on developing quality observation measures, see the third paper in this series: Torre Gibney, Rutherford-Quach, Hirschboeck et al. [2020].)

Another program leader stressed the importance of building faculty awareness and buy-in around data collection instruments (e.g., the observation rubric and candidate surveys), reflecting their worry that faculty who were not involved in the development of these tools would not be as invested in the data they yielded.

**Another program leader concurred that trust and teamwork are built by focusing on improvement goals. “We need to sit down together and say, ‘What are we curious about? What do we want to know?’”**

Finally, program leaders acknowledged that building a culture of trust required reorienting stakeholders toward an improvement stance. This involved allaying concerns about using data for evaluation or blame. At faculty meetings, said one CIL, “we are working on building a culture of analyzing the data without guilting each other, instead using the information for improvement over time. People who didn’t really have that model before might feel like this is evaluative or assessing them. Rather, it’s ‘let’s learn and improve.’” Another program leader concurred that trust and teamwork are built by focusing on improvement goals. “We need to sit down together and say, ‘What are we curious about? What do we want to know?’”



# Conclusion

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Over the course of NGEI, the CSU teacher preparation system built capacity for continuous improvement at both the campus and system levels. Greater capacity to effectively and routinely collect, analyze, and use data became the platform for program transformation, allowing progress toward the goal of becoming more clinically oriented. (For more detail, see the third paper in this series: Torre Gibney, Rutherford-Quach, Hirschboeck et al. [2020].) Many data-related practices are likely to continue beyond the NGEI grant period, particularly at partnerships that most intentionally implemented changes.

The four levers outlined in this paper mattered for partnerships' success. Taken separately, each lever had an impact as follows:

- **Data sources that can inform continuous improvement.** Using data from both outcome and process measures helps those involved in improvement efforts diagnose problems and act accordingly. NGEI efforts to expand access to outcome data and to develop data sources close to processes to be improved helped program staff highlight areas for improvement and continuously learn whether the programs were on track to reach intended outcomes and adjust accordingly.
- **Clear roles to support continuous improvement.** Delineating roles and responsibilities for each aspect of a data process ensures that the process yields what's needed: usable improvement data. By leveraging existing roles and creating the CIL position, many NGEI campuses were able to more efficiently and effectively turn data into meaningful information to inform improvement.
- **An infrastructure for efficient data entry and analysis.** Continuous improvement requires frequent and ongoing data collection and processes for making relevant data available in a timely fashion and in analyzable formats. Streamlining processes for data entry and analysis helps ensure that data is up to date, accurate, and easily accessible to those who need to use it to inform program improvements.
- **A culture of improvement through routines for data review and use.** Once data has been collected and analyzed, routines that facilitate its review are important for building a culture of data-informed decision-making. Routine review is most effective in supporting continuous improvement when it includes multiple stakeholders, is well-timed to align with moments when the data can best be used, and focuses decision-making on issues most pivotal to achieving program goals.

Taken together, the four levers supported a continuous improvement orientation across NGEI TPPs by creating the following:

- **A focus on ensuring the effectiveness of processes.** These processes shape the caliber and quality of candidates' preparation experiences (rather than an outsized focus on accountability-based compliance through collecting data only to report it). This helps create more internally felt responsibility and ownership for programmatic improvement at TPPs. TPPs used data related to candidates' preparation experiences to improve processes that are essential drivers of valued outcomes, including feedback to candidates, mentoring, coursework/clinical alignment, and professional learning for supervisors and clinical coaches.
- **A culture of data-informed action.** As frequent, collaborative monitoring of data became more routine, partners were better able to identify specific high-leverage areas for program improvement and felt empowered by the evidence to be targeted and purposeful in identifying and testing promising solutions.
- **A commitment, born of positive experience, to sustaining new norms of continuous improvement.** Once people experienced the insights gained from being able to routinely analyze relevant data, the resultant ability to create specific solutions to identified problems, and the positive effects of those actions on key aspects of the candidate experience, commitment to continuous improvement grew.

Components of each lever are likely to be sustained in some form after the NGEI grant ends, but continuation of all levers at each campus is uncertain. At the CSU system level, the EdQ Center and the Chancellor's Office have developed their capacity to support campuses' continuous improvement and introduced critical structural elements. These include accessible systemwide data sources that provide information about valued outcomes, institutional roles to support continuous improvement at the EdQ Center, and networks where those in continuous improvement roles can share information, ideas, and activities.

At the campus level, there is broad commitment to sustaining norms and routines of continuous improvement. However, it takes time and attention to sustain data routines, and it is unclear whether campuses will be able to maintain and advance data-focused norms without roles dedicated specifically for that purpose. The Chancellor's Office is in a position to provide campuses with additional supports as they work to institutionalize new roles and data infrastructure. Of central concern is advancing the emerging system of measures required to sustain and scale continuous improvement of the teacher preparation system.<sup>48</sup>

# Recommendations

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We offer the following recommendations to policymakers, funders, and other stakeholders who aim to support shifts toward continuous improvement of TPPs:

- 1. Build upon the emerging system of measures to support continuous improvement in teacher preparation.** Doing so will ensure that those tasked with continuous improvement of TPPs and systems have access to both outcome and process data needed to drive ongoing improvement efforts. For those engaged in day-to-day improvement efforts, having that data is essential for knowing whether their work is on track toward achieving valued outcomes. Also critical is making sure that data collection, analysis, and display are informed by those who will be using it and refined by their input over time. Leaders can help by reducing barriers and burdens associated with collecting and accessing high-quality process and outcome data.
- 2. Foster a culture of trust and teamwork.** A focus on capacity building, not blame, makes it safe to have open, data-based dialogue, identify performance gaps, and take action to close those gaps. System and program leaders play a key role in communicating valued outcomes and establishing a continuous improvement culture.
- 3. Dedicate human resources to lead continuous improvement efforts. Data-informed decision-making is key for continuous improvement.** It requires designating specific roles to lead improvement efforts and coordinate routines for data collection and analysis. Requisite responsibilities can be built into existing job descriptions. Those in these roles need to include people working close to the processes being improved.
- 4. Distribute the work of data collection, analysis, and review.** Involving leadership, faculty, mentor teachers, and supervisors brings diverse and needed perspectives on the processes being created or changed. Inclusive involvement also reduces the vulnerability of data routines to turnover among individual champions.
- 5. Strive to ensure that data routines become institutionalized norms.** In this effort, both key sets of routines are critical: frequent and regular data collection and analyses processes, and consistent and purposeful data review. Data routines are more likely to become institutionalized norms when they are efficient, focused, and meaningful – that is, when they clearly attend to the essential questions different stakeholder groups need to answer for effective program improvement.

## Appendix A: NGEI Partnership Overviews

Partnership overviews are derived from data collected primarily in the final year of the three-year New Generation of Educators Initiative (NGEI) grant, including interviews with partnership stakeholders and reports to the S. D. Bechtel, Jr. foundation. Each overview below consists of an exhibit (numbers 1-10) that lists the name of the campus and district partner, the credential program(s) targeted by the NGEI reforms, the rubric adopted by the NGEI partnership, and any technical assistance partners with whom the partnership worked. Following each exhibit is a narrative description of the partnership. The descriptions are not meant to be exhaustive, detailing all activities supported by NGEI funds; rather, they describe partnerships' major activities and accomplishments toward the reform's five Key Transformational Elements (detailed in Appendix B). Because data about what would be sustained beyond the grant was incomplete, and largely based on stakeholder predictions, we did not include it in the following descriptions.

### Exhibit A1. CSU Bakersfield (CSUB)

<b>Partner District(s)</b>	Bakersfield City School District (BCSD)
<b>Credential Program(s) Targeted by Reforms</b>	Multiple Subject and Single Subject (residents have the opportunity to earn both)
<b>Partnership Rubric</b>	Adapted from the Danielson Framework for Teaching <sup>a</sup>
<b>Technical Assistance Partners</b>	National Center for Teacher Residencies (NCTR), TeachingWorks fellowship, continuous improvement coaching, WestEd Continuous Improvement Fellowship

<sup>a</sup> Rubric available on the [Educator Quality Center website](#) or [CSU NGEI website](#).

CSUB partnered with BCSD to create the Kern Urban Teacher Residency (KUTR), thereby expanding CSUB's pre-existing residency program with three rural school districts. KUTR focused on preparing preservice teacher residents to integrate standards-aligned STEM education into TK-8 by co-teaching alongside mentor teachers. CSUB and BCSD began by co-selecting a rubric to measure their prioritized skills, the Danielson Framework for Teaching. The rubric was adapted and used to assess candidate progress and guide feedback. The half-time district and university partnership coordinators co-led key partnership activities:

- Establishing processes for co-selecting mentor teachers who demonstrated exemplary standards-aligned instruction and placing residents with them in yearlong co-teaching placements

- Increasing opportunities for residents to practice and get feedback on clinical skills by hosting a BCSD-funded Saturday STEM lab school for fifth and sixth grade students. During the lab school, residents could practice delivering Next Generation Science Standards (NGSS) and Common Core State Standards: Mathematics (CCSS-M) lessons with enrolled students, under the guidance of mentor teachers and faculty
- Co-planning and co-teaching math and science methods courses
- Providing training to mentor teachers, supervisors, and candidates on the rubric, including strengthening tools and processes for capturing mentor teacher and supervisor rubric feedback and sharing it with candidates in a timely manner
- Establishing a pathway for all KUTR residents to earn both a Multiple Subject credential and a Single Subject credential in math or science
- Improving the frequency and quality of supervisor feedback to candidates, with continuous improvement coaching support. The coordinators developed a Google Form for supervisors to enter their feedback after each observation and routinely analyze the data to assess how often candidates were being observed and the quality of the feedback they received

As of spring 2019, KUTR was poised to be sustained in BCSD, and CSUB was working to expand its model to three additional districts in California's Central Valley.

#### Exhibit A2. CSU Channel Islands

<b>Partner District(s)</b>	Ocean View School District (OVSD) <sup>a</sup> University Preparation Charter School (UPCS)
<b>Credential Program(s) Targeted by Reforms</b>	Multiple Subject
<b>Partnership Rubric</b>	In development by spring 2019 <sup>b</sup>
<b>Technical Assistance Partners</b>	NCTR

<sup>a</sup> Ocean View School District withdrew from the NGEI partnership in 2018.

<sup>b</sup> Partnerships could choose to develop their own classroom observation rubric, or to select a pre-existing, validated instrument.

Early in the grant, CSU Channel Islands (CSU CI) partnered with UPCS and OVSD to strengthen integration of the coursework and clinical experiences in Multiple Subject science and math. The science methods faculty member from CSU CI, in collaboration with the science specialist at UPCS,

worked to develop a new approach to training mentor teachers. The training included both Multiple Subject teacher candidates and their mentor teachers, provided foundational NGSS knowledge, and supported the mentor teachers and candidates to co-plan an NGSS-aligned unit. Both the science and math methods teachers took strides to make their courses more clinically oriented. For the math methods professor, this included collaborating with mentor teachers to give candidates in-classroom opportunities to practice with students.

In the last two years of the grant, CSU CI moved beyond its NGEI partnership work to cultivate relationships with stakeholders outside of UPCS and OVSD. They did this by holding focus groups, town hall meetings, and work groups with a wide range of community stakeholders across Ventura County, with the purpose of identifying broader community priorities. It was with these partners that CSU CI collaboratively identified a single prioritized skill, differentiated instruction, and decided to explore the Danielson Framework as its classroom observation rubric. In the last year and a half, CSU CI worked with the Danielson Group and its community partners to adapt the rubric, which it planned to pilot in 2019–20.

Through its work with NCTR, CSU CI also laid the groundwork for teacher residencies with two new partner districts in Ventura County. CSU CI made progress toward strengthening its data infrastructure, using a new data management system called Via by Watermark, which it planned to use for managing signature assignments and candidate evaluations.

### Exhibit A3. CSU Chico

<b>Partner District(s)</b>	Chico Unified School District (CUSD)
<b>Credential Program(s) Targeted by Reforms</b>	Most reforms geared toward Multiple Subject credentialing program; rubric implemented with all credentialing programs
<b>Partnership Rubric</b>	Adapted from The New Teacher Project (Tntp) Core Teaching Rubric <sup>a</sup>
<b>Technical Assistance Partners</b>	NCTR, TeachingWorks fellowship, data support, continuous improvement coaching

<sup>a</sup> Rubric available on the [Educator Quality Center website](#) or [CSU NGEI website](#).

The partnership between CSU Chico and CUSD focused on preparing preservice and in-service teachers to teach NGSS through an initiative called the Triad Project. Triad was open to all Multiple Subject (elementary) and Single Subject (middle school) candidates enrolled in a science methods course and placed in CUSD. The partnership began by identifying a rubric to measure their prioritized skills, which were the dimensions of the Tntp Core Teaching Rubric. Each participating candidate was paired with

a mentor teacher and a science “content specialist” from CSU Chico (together known as the Triad), with whom they collaborated throughout the semester to develop and implement a science unit aligned to the NGSS. Triad supports included the following:

- Initial training for candidates and mentor teachers on co-teaching strategies and the NGSS
- Ongoing professional development for mentor teachers and candidates as they co-planned, and prepared to co-teach, their lessons

By spring 2019, the Triad Project had produced nearly 70 NGSS-aligned science units that were published online and incorporated into CUSD teachers’ trainings, or given to district teachers to implement. In addition to these partnership reforms, the campus executed additional reforms to improve the clinical orientation of their teacher preparation program. These included the following:

- Implementing a modified version of the TNTP Core Teaching Rubric for observations across all credentialing programs in the School of Education
- Integrating NGSS-aligned, practice-based instruction across science methods courses
- Making practice-based reforms to a Multiple Subject math methods course with support from TeachingWorks
- Strengthening processes for collecting and analyzing rubric data to inform candidate progress, with coaching support from WestEd and SRI International

#### Exhibit A4. CSU Fresno

<b>Partner District(s)</b>	Central Unified School District (CUSD) Fresno Unified School District (FUSD) Sanger Unified School District (SUSD)
<b>Credential Program(s) Targeted by Reforms</b>	Most reforms geared toward Multiple Subject
<b>Partnership Rubric</b>	Partnership-developed <sup>a</sup> Continuum of Reflective, Engaging, and Accessible Teaching (CREATE) rubric <sup>b</sup>
<b>Technical Assistance Partners</b>	NCTR, data support, continuous improvement coaching, WestEd Continuous Improvement Fellowship

<sup>a</sup> Partnerships could choose to develop their own classroom observation rubric, or to select a pre-existing, validated instrument.

<sup>b</sup> Rubric available on the [Educator Quality Center website](#) or [CSU NGEI website](#).

Through NGEI, CSU Fresno deepened three existing district partnerships by establishing a clinical school in FUSD and Teacher Residency Programs (TRPs) in Sanger and CUSD for Multiple Subject candidates. The partnership started by developing and implementing a shared observation rubric,



Continuum of Reflective, Engaging, and Accessible Teaching (CREATe). A teacher in residence and faculty in residence assigned to each partnership executed major partnership activities, including the following:

- Establishing processes for the teacher in residence and faculty in residence to collaboratively recruit, select, place, and guide residents through residency processes, while providing support to mentor teachers
- Providing candidates with ongoing (six times per semester) rubric-based, formative feedback
- Providing mentor teachers and supervisors with rubric training

In addition to these partnership reforms, the campus executed additional reforms to improve the clinical orientation of its teacher preparation program by

- updating Multiple Subject courses to include co-teaching components, including a revamped teacher preparation curriculum with a focus on social justice, culturally and linguistically sustaining pedagogy, teacher inquiry, developmentally appropriate practice, and universal design and universal access;
- strengthening the processes for reviewing and making decisions based on clinical data, by (1) hiring a faculty member to be continuous improvement lead, (2) incorporating rubric feedback into midterm and end-of-semester conversations with candidates, (3) reviewing candidate rubric data at monthly faculty meetings, and (4) surveying candidates to understand the quality of feedback they received from mentor teachers and supervisors. With data support from WestEd, the partnership also worked to conduct a validation study comparing the CREATe rubric to TNTP Core Teaching Rubric.

#### Exhibit A5. CSU Fullerton (CSUF)

<b>Partner District(s)</b>	Chico Unified School District (CUSD)
<b>Credential Program(s) Targeted by Reforms</b>	Most reforms geared toward Multiple Subject credentialing program; rubric implemented with all credentialing programs
<b>Partnership Rubric</b>	Adapted from The New Teacher Project (TNTP) Core Teaching Rubric <sup>a</sup>
<b>Technical Assistance Partners</b>	NCTR, TeachingWorks fellowship, data support, continuous improvement coaching

<sup>a</sup> Rubric available on the [Educator Quality Center website](#) or [CSU NGEI website](#).

The NGEI partnership between CSUF and its partner districts focused on strengthening a residency program established in the first phase of the grant,<sup>i</sup> Titan EDUCATOR, in AUHSD, and expanding it to two additional partner districts, OUSD and PYLUSD. The residency program benefitted candidates in the Multiple Subject, Education Specialist, and Single Subject programs. With input from partner districts, CSU Fullerton chose to adopt the Mathematics Classroom Observation Protocol for Practices (MCOP2) rubric. Notably, faculty from all three credential areas were engaged with the NGEI reforms, which supported the implementation of residency elements across the School of Education, including two new roles: professional development facilitators and clinical coaches. Professional development facilitators were faculty members from the credentialing programs who supported partnership activities in each partner district, including trainings for mentor teachers. Clinical coaches were a reconfigured university supervisor role that provided clinical support to both candidates and master teachers. Campus and district leaders worked to sustain key clinical reforms in AUHSD and expand them to OUSD and PYLUSD, including

- continuing and scaling key clinical structures into OUSD and PYLUSD: (1) anchor schools; (2) professional development facilitator and clinical coach roles; and (3) yearlong placements following the district calendar;
- offering Multiple Subject methods courses and reflective learning walks at partner district anchor schools;
- training mentor teachers and clinical coaches on the MCOP2 rubric and co-teaching; and
- implementing “focused visits” (when a coach conducts an observation of a candidate with one to two of the California Teacher Preparation Expectations as the focus of the observation) for coaches in all three credentialing programs.

In addition to these partnership reforms, the campus executed reforms to improve the clinical orientation of its teacher preparation program by

- streamlining processes for collecting and sharing feedback with candidates by developing a single observation form for coaches to use during clinical observations;
- making practice-based reforms to math methods courses across all three credential programs with support from TeachingWorks; and
- establishing new data routines, including (1) reviewing rubric data every semester; (2) working with the continuous improvement team to develop and begin administering an end-of-semester survey; and (3) beginning to conduct end-of-semester focus groups with teacher candidates,

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i. For more detail, see the first paper in this series: White, Milby, Hirschboeck et al. (2020).

clinical coaches/university supervisors, and mentor teachers to assess all aspects of the teacher preparation program.

In the last year of the grant, CSU Fullerton took lessons learned during MCOP2 implementation and began developing a science classroom observation protocol (SCOP) to provide feedback specific to science instruction.

#### Exhibit A6. CSU Long Beach (CSULB)

<b>Partner District(s)<sup>a</sup></b>	Garden Grove Unified School District (GGUSD) Little Lake City School District (LLCSD) Long Beach Unified School District (LBUSD) Los Angeles Unified School District (LAUSD) Magnolia School District (MSD) Ocean View School District (OVSD) Paramount Unified School District (PUSD) Santa Ana Unified School District (SAUSD) Savanna Elementary School District (SESD)
<b>Credential Program(s) Targeted by Reforms</b>	Multiple Subject; Urban Dual Credential Program (UDCP)
<b>Partnership Rubric</b>	Partnership-developed rubric <sup>b,c</sup> based on the California Teaching Performance Expectations (TPE) and California Standards for the Teaching Profession (CSTP)
<b>Technical Assistance Partners</b>	Data support, continuous improvement coaching

<sup>a</sup> LBUSD joined the NGEI partnership team in phase 1. All other districts joined in 2017–18 except for Magnolia, Savanna, and Garden Grove, which joined in 2018–19.

<sup>b</sup> Partnerships could choose to develop their own classroom observation rubric, or to select a pre-existing, validated instrument.

<sup>c</sup> Rubric available on the [Educator Quality Center website](#) or [CSU NGEI website](#).

CSULB’s NGEI reforms spread across the Multiple Subject credential program and Urban Dual Credential Program (UDCP), so reforms impacted all nine partner school districts where candidates were placed. However, LBUSD has been CSULB’s primary district partner since phase 1 of the NGEI grant. Through NGEI, CSULB worked with partner districts to provide all Multiple Subject preservice candidates with an integrated yearlong clinical experience alongside a high-quality mentor teacher in the Clinical Practice Network (the network of high-quality mentor teachers who received training and support in mentoring, co-teaching, and the NGEI rubric). A major focus was establishing and integrating its rubric, which was based on the TPE and California Standards for the Teaching Profession (CSTP). Leaders from CSULB and its partner districts executed key partnership activities:

- Developing and implementing the clinical 1, 2, and 3 sequence (which included early field experience, early field experiences as they relate to methods courses, and student teaching, respectively) for Multiple Subject candidates' clinical practice
- Establishing anchor schools and recruiting a cadre of mentor teachers
- Providing mentor teachers with training for mentoring, co-teaching, and using the rubric

The anchor schools, the clinical 1–3 sequence, and training for mentor teachers were first implemented in phase 1. Phase 2 focused on integrating the rubric into these structures and throughout the preservice teacher experience. In addition to these partnership reforms, the campus executed reforms to improve the clinical orientation of its teacher preparation program:

- Establishing an Office of Clinical Practice (OCP) at the School of Education to oversee anchor school selection, mentor teacher selection, and candidate placements at anchor schools
- Integrating the rubric into trainings for Multiple Subject and UDCP mentor teachers and university supervisors
- Using the rubric to assess Multiple Subject candidates' progress during their clinical placement and to determine whether candidates could progress through the program
- Streamlining its system for collecting and analyzing rubric data by working with the data support team from WestEd and SRI to develop and refine regular routines for analyzing rubric data

As of spring 2019, the partnership planned to expand rubric implementation to the Education Specialist program as well.

#### Exhibit A7. CSU Monterey Bay (CSUMB)

<b>Partner District(s)</b>	Monterey Peninsula Unified School District (MPUSD) Salinas City School District (SCSD) Salinas Union High School District (SUHSD)
<b>Credential Program(s) Targeted by Reforms</b>	Multiple Subject, Single Subject, Education Specialist
<b>Partnership Rubric</b>	Partnership-developed <sup>a</sup> STEM prioritized skills rubric <sup>b</sup> measures high-quality STEM instructional "moves"
<b>Technical Assistance Partners</b>	NCTR, TeachingWorks fellowship, continuous improvement coaching

<sup>a</sup> Partnerships could choose to develop their own classroom observation rubric, or to select a pre-existing, validated instrument.

<sup>b</sup> Rubric available on the [Educator Quality Center website](#) or [CSU NGEI website](#).

CSUMB partnered with three districts for NGEI, although the bulk of reforms were implemented in their partnership with MPUSD. Leaders from CSUMB and MPUSD collaborated to provide MPUSD teachers with STEM-based professional development and to improve preservice supports to better prepare candidates to teach science in the district. Their work started by developing a STEM rubric that defined high-quality STEM instructional behaviors, based on the California Teaching Performance Expectations (TPE). Specific partnership activities focused on

- increasing opportunities for candidates to practice STEM skills by implementing an after-school program called Stone Soup, during which candidates delivered science lessons to MPUSD students;
- implementing two new residencies with partner districts: (1) an Education Specialist residency with Salinas City School District, and (2) a Single Subject residency with Salinas Union High School District;
- implementing new clinical structures and processes, including (1) identifying anchor sites, (2) creating mentor teacher and school selection criteria, and (3) developing a gradual release of responsibility document specifying how mentor teachers should support candidates throughout the year; and
- providing training and coaching to MPUSD teachers and candidates; major topics included high-quality STEM instruction, co-teaching, NGSS, and an MPUSD-adopted curriculum (STEM Scopes).

In addition to these partnership reforms, the campus executed reforms to improve the clinical orientation of its teacher preparation program by

- incorporating the STEM rubric into the feedback and assessment of Multiple Subject candidates during observations of science lessons and during science and math methods courses;
- providing training to supervisors (called “clinical coaches”) focused on how to give high-quality feedback that is aligned to the rubric;
- making practice-based reforms to Multiple Subject math and science methods courses with support from TeachingWorks. By the end of the grant, coursework reforms had also spread to Single Subject English language arts (ELA), math, and science methods courses; and
- implementing new processes for capturing rubric-aligned feedback and using data to assess candidate progress.

Notably, the partnership’s early STEM-focused work lay the groundwork for the later development of a content-agnostic TPE-based rubric that was implemented across the Multiple and Single Subject credentialing programs.

#### Exhibit A8. CSU Sacramento

<b>Partner District(s)</b>	Sacramento City Unified School District (SCUSD)
<b>Credential Program(s) Targeted by Reforms</b>	Multiple Subject credential students placed in SCUSD
<b>Partnership Rubric</b>	Partnership-developed rubric, <sup>a,b</sup> derived from the California Teaching Performance Expectations (TPE), and a district tool aligned to the Common Core State Math Standards (CCSS-M) and used in classroom observations
<b>Technical Assistance Partners</b>	NCTR, TeachingWorks fellowship, continuous improvement coaching

<sup>a</sup> Partnerships could choose to develop their own classroom observation rubric, or to select a pre-existing, validated instrument.

<sup>b</sup> Rubric available on the [Educator Quality Center website](#) or [CSU NGEI website](#).

CSU Sacramento and SCUSD’s partnership focused on strengthening the clinical orientation of their program for all Multiple Subject candidates placed in SCUSD. The partnership engaged in a collaborative process to identify prioritized skills; through this process, they co-developed a partnership rubric, called the Prioritized Skills Profile (PSP). Faculty from the campus worked with district leads to execute partnership activities by

- extending clinical placements to be yearlong rather than semester-long;
- leading trainings for mentor teachers and supervisors about prioritized skills, co-teaching, clinically oriented preparation, and feedback;
- leading trainings for university faculty focused on how to create assignments incorporating the prioritized skills into their courses as well as how to observe and give feedback on the prioritized skills in course and clinical experience contexts;
- establishing an application process for all SCUSD teachers seeking to be mentor teachers;
- strengthening the pipeline of candidates hired to the district by establishing an early decision timeline for candidates coming from CSU Sacramento; and
- developing and beginning to implement standard processes for supervisors and mentor teachers to give consistent feedback aligned to prioritized skills; although the PSP was no

longer in use by spring of 2019, four of the prioritized skills were embedded into the midterm and final clinical evaluations to collect formative data on candidate progress.

In addition to these partnership reforms, the campus made practice-based reforms to English Language Arts and math methods courses through participation in the TeachingWorks fellowship.

#### Exhibit A9. California Polytechnic University, San Luis Obispo (Cal Poly SLO)

<b>Partner District(s)</b>	Lucia Mar Unified School District (LMUSD) San Luis Coastal Unified School District (SLCUSD)
<b>Credential Program(s) Targeted by Reforms</b>	Mostly geared toward candidates placed in K–8 classrooms (this included Multiple, Single, and Special Education programs). Coursework reforms and use of the observation rubric were implemented across all credentialing areas.
<b>Partnership Rubric</b>	Clinical Observation Rubric (called the School of Education Observation Tool), <sup>a</sup> inspired by the Danielson Framework for Teaching
<b>Technical Assistance Partners</b>	TeachingWorks fellowship, continuous improvement coaching, WestEd Continuous Improvement Fellowship

<sup>a</sup> Rubric available on the [Educator Quality Center website](#) or [CSU NGEI website](#).

Cal Poly SLO worked with two partner districts throughout the grant. The first, LMUSD, was the pilot site for the partnership model that Cal Poly later replicated with its second partner district, SLCUSD. The partnership’s rubric was inspired by the Danielson Framework for Teaching; however, the partnership modified it for the preservice context by aligning it to the California Teaching Performance Expectations and adding skills focused on supporting emergent bilinguals and students with disabilities. To facilitate campus–district collaboration, each partnership included an advisory board of campus and district leaders and both a partnership liaison (a university faculty member) and a district liaison (a district teacher on special assignment). Together, campus leads, the partnership liaison, and the district liaison at each partner district worked to execute key partnership activities, including:

- selecting mentor teachers;
- providing mentor teachers with training for giving high-quality, rubric-based feedback;
- providing district teachers with other needs-based professional development supporting standards-aligned instruction; and
- launching the New Teacher Learning Community (NTLC) in LMUSD to provide early career teachers with professional development and support.



In addition to these partnership reforms, the campus executed reforms to improve the clinical orientation of its TPP:

- Establishing a standard observation tool for supervision across the entire School of Education
- Making practice-based coursework reforms to ELA and math methods courses through participation in the TeachingWorks fellowship
- Integrating the prioritized skills throughout the candidate experience by (1) developing seven online learning modules describing the prioritized skills, (2) embedding the modules into coursework expectations, and (3) focusing candidate observations and feedback on prioritized skills
- Improving data structures and routines by (1) implementing new processes for using rubric data for program improvement, and (2) developing a data review protocol to integrate data-driven conversations into program meetings

Notably, the university NGEI team included faculty representation from the three main credentialing programs, which helped the campus faculty implement reforms schoolwide. The partnership also improved its use of data to drive decision-making via participation in continuous improvement coaching. The continuous improvement work surfaced a need to improve supports for early career teachers, which prompted the partnership to create the NTLC.

#### Exhibit A10. CSU Stanislaus

<b>Partner District(s)</b>	Ceres Unified School District (CUSD) Turlock Unified School District (TUSD)
<b>Credential Program(s) Targeted by Reforms</b>	Multiple Subject
<b>Partnership Rubric</b>	5D+ Dimensions of Teaching and Learning <sup>a</sup>
<b>Technical Assistance Partners</b>	NCTR, TeachingWorks fellowship, continuous improvement coaching, data support

<sup>a</sup> Rubric available on the [Educator Quality Center website](#) or [CSU NGEI website](#).

CSU Stanislaus partnered with CUSD and TUSD to strengthen the clinical preparation of Multiple Subject candidates as defined by their prioritized skills. The campus and partner districts co-selected the 5D+ Dimensions of Teaching and Learning rubric for supervisors and mentor teachers to use when giving candidates feedback. Campus leads and the induction coordinator at each partner district worked together to execute key partnership activities:

- Creating the Warriors Teach! residency pathway in the final year of the grant for Multiple Subject candidates placed in CUSD and TUSD
- Developing new processes for selecting anchor schools and placing candidates
- Leading trainings for mentor teachers on co-teaching strategies
- Leading trainings for university supervisors on the 5D+ rubric and providing rubric-aligned feedback
- Establishing more defined and developed processes for supervisors to provide rubric-aligned feedback throughout their clinical placement
- Strengthening the link between candidate preparation and hiring/induction in the partner district
- Launching the Next Generation Science Standards (NGSS) Collaborative that gave district teachers the opportunity to receive professional development on the NGSS and develop an NGSS-aligned science unit in partnership with a science university faculty member <sup>ii</sup>

In addition to these partnership reforms, the campus executed reforms to improve the clinical orientation of its teacher preparation program:

- Making practice-based reforms to three English Language Arts and math methods courses with support from the TeachingWorks fellowship
- Improving data-driven decision-making through continuous improvement coaching work, which included (1) engaging a data manager to handle and process all NGEI data, (2) developing a data management plan to systematically collect survey feedback from candidates about mentor teacher and supervisor quality, and (3) using data from these surveys to make decisions about mentor teacher and supervisor selection

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ii. This initiative was inspired by CSU Chico's Triad Project.

## Appendix B: NGEI Key Transformational Elements

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The New Generation of Educators Initiative (NGEI) Key Transformational Elements (KTE) grounded all grant activities and were the framework for partnership reform efforts. The NGEI steering committee developed the original KTEs in 2015 prior to phase 1 of the NGEI grant, then updated the KTEs in 2016 based on learnings from phase 1. The following lists each KTE and its related goal.

### KTE #1 Partnership

Maintain and deepen partnerships between the CSU campus and the K-12 districts that 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.

**KTE #1 goal:** By the 2018–2019 school year, at least 75 percent 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 full-time equivalent (FTE) on maintenance of the partnership, with sustainable funding in place to continue these roles.

### 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 (NGSS). Select an appropriate rubric to measure progress toward these prioritized skills. Where appropriate, demonstrate alignment with Teaching Performance Expectations and district-identified teaching effectiveness frameworks.

**KTE #2 goal:** By the 2018–2019 school year, teachers prepared in a partnership program will be required to demonstrate competency with prioritized skills. These skills will be determined in partnership and drawn from the TPE and an instructional rubric, for example, Danielson Framework for Teaching, TAP Instructional Rubric, the district’s own rubric, or a different approved rubric.

### KTE #3 Practice-Based Clinical Preparation

Build and refine opportunities for candidates to gain fluency with prioritized skills during clinical preparation.

**KTE #3 goal:** By the 2018–2019 school year, teacher candidates prepared in partnership programs will be placed in clinical settings explicitly designed to allow them to build facility with prioritized skills. Ideally, these clinical settings will include well-designed co-teaching opportunities that span a full school year. Clinical experiences will include multiple opportunities to demonstrate competency with 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.

**KTE #4 goal:** By the 2018–2019 school year, partnerships will 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.

## 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.

**KTE #5 goal:** By the 2018–2019 school year, partnerships will 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.

## Appendix C: Evaluation Data and Methods

WestEd and SRI International conducted a formative evaluation to track New Generation of Educators Initiative (NGEI) implementation at 10<sup>iii</sup> campus–district partnerships that participated in NGEI, which spanned fall 2016 through spring 2019.<sup>iv</sup>

NGEI aimed to introduce clinically oriented reforms to teacher preparation across the California State University (CSU) system, thereby increasing the number of new teachers in California prepared to deliver standards-aligned instruction.<sup>v</sup> Each of the 10 grantee campuses partnered with one or more school districts to implement reforms grounded in the Foundation’s reform framework, operationalized by five key transformational elements (KTEs):<sup>vi</sup>

- Partnership between campus and district
- Identification of prioritized skills
- Development of practice-based clinical preparation
- Provision of formative feedback on prioritized skills
- Engagement in data-driven continuous improvement

To evaluate progress toward these five KTEs and provide formative feedback to the grantee partnerships and the S. D. Bechtel, Jr. Foundation, evaluators from SRI and WestEd collected qualitative data and artifacts from each campus–district partnership twice annually between fall 2016 and spring 2019.

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iii. NGEI began with 11 campuses, but one campus chose to end its participation in 2017. We focus on findings for the 10 campuses who participated for the entire grant period.

iv. The first phase of NGEI, which lasted from winter 2015 to summer 2016, included partnerships that continued into phase 2; however, this paper series focuses primarily on outcomes and lessons learned from the evaluation of phase 2 reforms (hereafter known as “NGEI”), unless specifically noted.

v. The phrase “standards-aligned instruction” refers to instruction aligned with California’s [Common Core State Standards \(CCSS\)](#) and [Next Generation Science Standards \(NGSS\)](#).

vi. Detailed in Appendix B.

## Data sources

The findings in this report series were distilled primarily from interviews conducted with stakeholders from the 10 partnerships in spring 2019, the final year of the evaluation. The evaluation team supplemented spring 2019 data with interviews, artifacts, reporting documents, and ongoing communications with project directors, foundation staff, and technical assistance staff throughout the three-year initiative. Sample artifacts included documentation of the partnerships' prioritized skills, classroom observation rubrics, training materials used to norm observers on each site's classroom observation rubric, and documentation of structures and processes.

To develop the findings, researchers collected and triangulated perspectives of various stakeholders from spring 2019 interviews, including principal investigators or project directors, continuous improvement leads, university supervisors, methods professors, district partners or liaisons, K-12 school administrators, mentor teachers, preservice teacher candidates, and others, including high-level campus and district leaders. Spring 2019 interviews were semistructured and role-specific; the evaluation team drew on partnership-specific program information collected throughout the initiative to tailor spring 2019 interviews. Interviews included questions about the KTEs, the sustainability of NGEI reforms, the implementation of NGEI activities, and how those activities supported progress toward the five KTEs.

The authors and their research teams interviewed or conducted focus groups with 238 informants in spring 2019, as summarized in the following table. We include interview counts from all three years of the evaluation to represent the full range of qualitative data collected.

### Exhibit C1. Interviews conducted between 2016 and 2019

Role	Spring 2019 Interviews	Spring 2018 Interviews	Spring 2017 Interviews	Spring 2016 Interviews
Principal Investigators/ Project Directors	19	22	76 university-based staff/faculty	14
Continuous Improvement Leads	11	12	76 university-based staff/faculty	N/A
University Supervisors	35	30	76 university-based staff/faculty	18
Methods Professors	23	24	76 university-based staff/faculty	N/A
District Partners/ Liaisons	24	23	51 district-based staff	N/A
K-12 School Administrators	17	11	51 district-based staff	7
Mentor Teachers	42	43	44	20
Preservice Teacher Candidates	58	60	66	18
Other <sup>a</sup>	24	28	N/A	N/A
Total	238	253	237	77

<sup>a</sup> Including high-level leaders at the campus (e.g., dean or department chair) and district (e.g., superintendent or chief academic officer).

### Spring 2019 analysis

The research team analyzed spring 2019 interview transcripts by coding them for responses relating to each KTE and then synthesizing findings by KTE at the partnership level. The research team met several times to discuss emerging findings and identify trends across partnerships. Researchers then identified cross-cutting themes and generated analytical summaries specific to each KTE area. These analytical summaries were used in conjunction with other data (detailed previously in the “data sources” section) to distill paper-specific findings. The collaborative and iterative nature of the data analysis allowed the research team to minimize bias and rely on themes and ideas that emerged directly from the data.



## Extant data and other analyses

Periodically, throughout the evaluation, the research team also collected and analyzed extant data sources, including the annual survey administered by the Educator Quality (EdQ) Center to all CSU teacher preparation program completers,<sup>vii</sup> classroom observation data submitted to the Foundation by most programs,<sup>viii</sup> classroom observations of in-service teacher practice from one partnership, and K-12 student surveys from one partnership.

Some of these extant data have been reported on in other publications, but the research team chose not to include them in this paper series due to data limitations that would inhibit the utility of the analysis. For example, we did not include analysis of the EdQ Center's completer survey data because the EdQ Center is not yet able to link NGEI participants with their completer survey records.

Included in the final reporting is analysis of participation, completion, and employment patterns using a merged dataset created by the WestEd team in partnership with the EdQ Center that included NGEI participation data collected for the evaluation; completer records collected by the EdQ Center; and completer employment records from the California Department of Education. This analysis is described in Appendix E of the the second paper in this series: Torre Gibney, D., Rutherford-Quach, S., Milby, A., Lam, A., & White, M. E. (2020). *Building strong partnerships to improve clinically oriented teacher preparation*. WestEd.

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vii. See the following for more detail on our methods and findings: Torre, D., White, M., & Gallagher, A. (2017). *Examining teacher preparation program feedback from CSU systemwide survey data: Using the CTQ completer survey to support data-driven continuous improvement*. SRI International and WestEd.

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  25. Specific disaggregations that the dashboard can display include race/ethnicity, gender, credential type (e.g., multiple subject, education specialist), subject (e.g., single subject math, single subject English), program model (e.g., internship, residency, student teaching), and program pathway (the specific program, e.g., Kern Urban Teacher Residency).
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