

## Re-Framing the Discussion about Teacher Education

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*CALDER Explainers* are designed to succinctly describe empirical research on contemporary topics in education and encourage evidence-based policymaking.

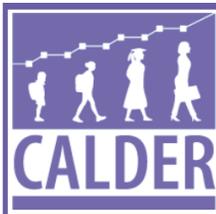
This CALDER Explainer reviews empirical evidence about the relationship between specific aspects of teacher education and schooling outcomes, and suggests directions for future research.

### Background

Teacher education is increasingly being held under the policy microscope. For instance, in a [2009 speech](#), Education Secretary Arne Duncan stated that: “By almost any standard, many if not most of the nation's 1,450 schools, colleges and departments of education are doing a mediocre job of preparing teachers for the realities of the 21st century classroom.” And, even more recently, the [National Council on Teacher Quality](#) concluded that, as a whole, teacher education programs “have become an industry of mediocrity, churning out first-year teachers with classroom management skills and content knowledge inadequate to thrive in classrooms.”

These statements (as well as recent [defenses](#) of traditional teacher education) focus primarily on teacher education *programs* as the unit of interest. Spurred by federal initiatives (such as Race to the Top) to [connect teacher education programs to the student achievement of their graduates](#), a number of researchers—including CALDER researchers in New York ([CALDER working paper 20](#)), Florida ([CALDER working paper 63](#)), Washington State ([CALDER working paper 65](#)), and Missouri ([CALDER working paper 79](#))—have investigated differences in student achievement that are associated with having a teacher who graduated from different teacher education programs. The findings from these papers have been discussed in considerable detail in a prior [CALDER Conversation](#), and while there is some variation across states—in particular, teacher education program effects appear to be larger in New York than in the other three states—the broad conclusions from these papers can be summarized in two broad points: (1) it is not currently possible to separate the influence of teacher candidate selection into programs and the workforce from the impacts of the training that teacher candidates receive in these programs; and (2) there is far more variation in teacher effectiveness *within* programs than *across* programs.

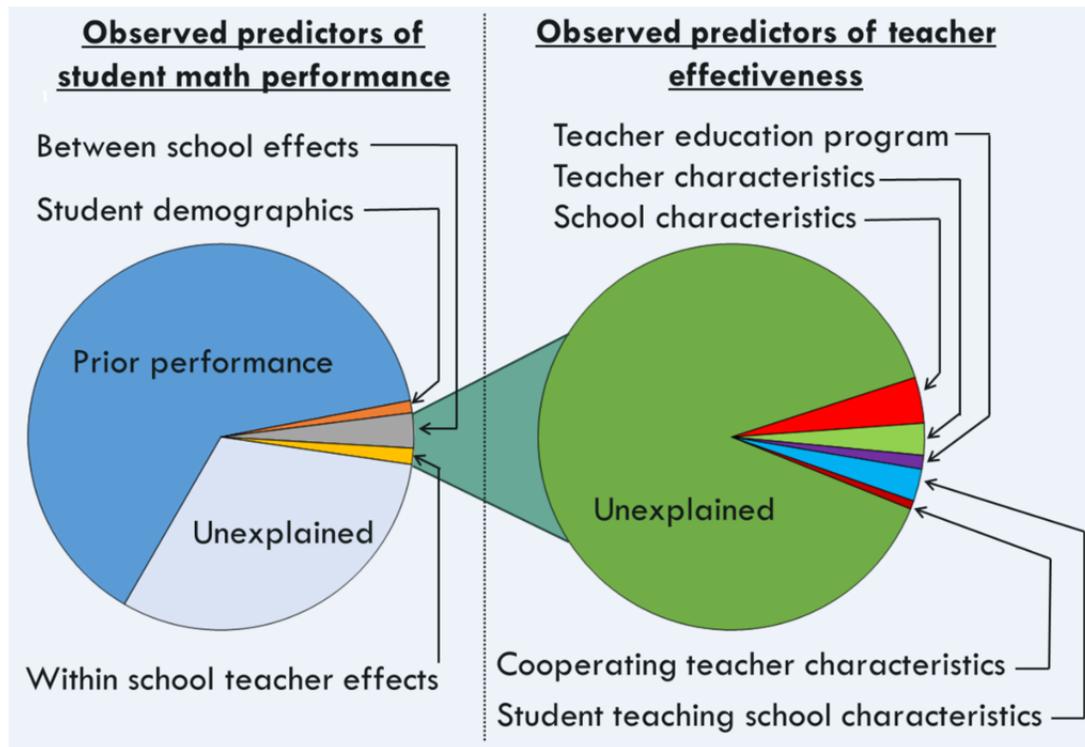
We illustrate this second conclusion in **Figure 1**, which we produce from a dataset that combines teacher candidate data from six teacher education programs in Washington State with student-level data from Washington State public schools (see CALDER working paper 149). The pie chart on the left (“Observed predictors of student math performance”) shows the



percent of the variation in student math test performance that can be explained by different types of observed variables. The majority of student test performance (63%) can be explained by prior student performance, while another 1% can be explained by student characteristics (e.g., gender, race, and program participation). Importantly for policy purposes, about 4% of the variation in student performance (or 12% of the variation that isn't explained by prior performance) can be attributed to teachers and schools.[1] Given evidence of the portability of teacher quality across schools ([CALDER working paper 77](#)), it is typical to attribute this portion to “teacher effectiveness”.

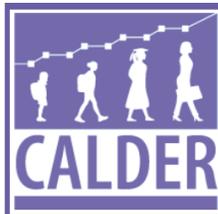
So, what do we know about what predicts teacher effectiveness, and how much of this appears to be related to teacher education? We explore this in the pie chart on the right of Figure 1, which breaks down *only the variation in student performance associated with teachers and schools* into portions associated with different types of observed variables. School and teacher characteristics (e.g., school demographics and teacher experience) explain about 6% of the variation in teacher quality. The next slice of the pie illustrates the second broad conclusion from the existing literature on teacher education program effects: only about *one percent* of the variation of teacher effectiveness can be explained by where a teacher received her teacher education.

**Figure 1. Observed Predictors of Student Math Performance and Teacher Effectiveness**



This conclusion does not contradict the statements by Arne Duncan and the National Council on Teacher Quality—it is perfectly possible that the lack of variation between outcomes associated with different teacher education programs can be explained by the “mediocrity” of traditional teacher education—but it does suggest that teacher education programs themselves may not be the right unit of analysis for empirical research about teacher education. For example, at least one [national report](#) argues that student teaching is the most important component of a teacher’s education, and—as shown in the last two slices of the second pie chart in Figure 1—the variation in student performance associated with the characteristics of a teacher’s student teaching school and cooperating teacher (the student teaching supervisor) is over *three times greater* than the variation in student performance associated with the teacher education program the teacher attended.

We therefore argue that national discussions and research about teacher education need to move beyond the program-level focus that dominates the current national dialogue and towards a more nuanced examination of the *specific aspects of teacher education* (e.g., program requirements and student teaching assignments) that appear to lead to better outcomes for students and teachers. In the next section, we summarize the existing empirical



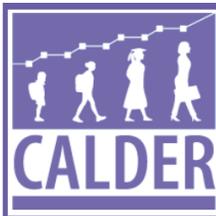
evidence that can inform these discussions, and conclude by outlining open questions that suggest directions for future research.

### Re-Framing the Issue: What Specific Aspects of Teacher Education Are Important?

Just five years ago, a [National Research Council](#) report noted that “currently, there is not a large research base on what makes clinical preparation effective.” This was largely true at the time, as only two large-scale, quantitative studies (both by CALDER researchers) connected *any* specific aspects of teacher education experiences to outcomes for teachers and students. [The first](#) provides evidence that some aspects of student teaching, such as a capstone project where teachers relate curriculum learning to actual practices, are predictive of future teacher effectiveness. And the second ([CALDER working paper 20](#)) suggests that teachers who identify similarities between their student teaching experience and their first-year classroom experiences have greater student achievement in their classrooms.

However, the last five years have seen a substantial expansion of the research base around teacher education. Some of the empirical evidence is somewhat disheartening; for example, [CALDER working paper 3](#) considers an impressive number of aspects of teacher education (e.g., the number of courses required by programs in different subject areas), but finds practically no relationship between *any* of these observable aspects of teacher education and future teacher effectiveness. Other evidence is more encouraging; for example, a [2012 paper](#) by Matt Ronfeldt suggests that teachers who did their student teaching in schools with less teacher turnover (typically more “highly-functioning” school settings) are more effective and less likely to leave the profession, and Ronfeldt’s recent [follow-up paper](#) suggests that that the level of teacher collaboration in teachers’ student teaching schools is also predictive of later teacher effectiveness. Finally, [CALDER working paper 149](#) suggests that teachers are more effective when the student demographics of their current school are similar to the student demographics of the school in which they did their student teaching.

Recent CALDER work focuses on the relationship between teacher education (and other observable characteristics of teachers *before* they enter the workforce) and patterns of workforce entry. [CALDER working paper 105](#) reports that teacher candidates are more likely to enter the public teaching workforce if they are endorsed in math, science, and special education (relative to elementary education), if they student taught in a school with more teacher turnover, and if they are non-white.[2] [CALDER working paper 144](#) gives evidence that student teaching assignments play an important role in determining where teachers eventually find their first teaching jobs.



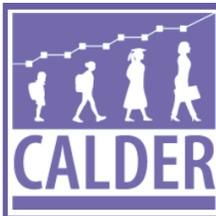
## Conclusions and Open Questions:

The papers cited above demonstrate the potential of research that focuses on specific aspects of teacher education (such as student teaching) rather than focusing on differences associated with teacher education programs themselves. But this research has barely scratched the surface in terms of what we may be able to learn about teacher education. The first step in this process is to collect more and better data about the specific teacher education experiences of teacher candidates. As we show in Figure 1, over *ninety percent* of the variation in teacher effectiveness cannot be explained by variables that are easily observable to researchers, but even relatively coarse measures of student teaching (i.e., the student teaching school and cooperating teacher) can help explain why some teachers are more effective than others. This suggests that more detailed teacher education data could establish deeper connections between teacher education and teacher effectiveness.

In particular, additional research could begin to address several open questions about teacher education. First, teacher education programs are increasingly required to implement new, clinical-based performance assessments such as the [edTPA](#) and [NOTE](#), and we know little about the relationship between teacher candidate performance on these assessments and their future effectiveness. Moreover, states such as [Massachusetts](#) have begun to align their assessments of teacher candidates with standards for inservice teachers, but we do not know how or whether this closer connection between teacher candidate evaluation and teacher evaluation will help teacher candidates or schools. Finally, teacher education programs are increasingly facing [accountability pressures](#) from states and the federal government, but it is not clear how teacher education programs will respond to these pressures.

What is clear, though, is that each of these developments provides an opportunity to learn more about what works in teacher education. Specifically, clinical performance assessments like the edTPA and NOTE could provide new outcome measures for assessing the effectiveness of other aspects of teacher education, a closer alignment between teacher candidate evaluation and teacher evaluation could permit a direct connection between *specific competencies* of individuals before and after they enter the workforce, and programs may respond to accountability pressures by implementing novel approaches to teacher education that could be connected to future outcomes for the teacher candidates in these programs. This is therefore an excellent time for further research that can push the national dialogue about teacher education beyond program comparisons and towards a better understanding of the best approaches to teacher education for teachers and students.

All of CALDER's Working Papers and further information about teacher labor markets can be found at CALDER's website, [www.caldercenter.org](http://www.caldercenter.org)



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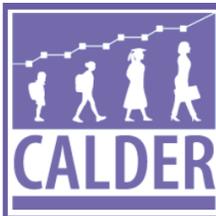
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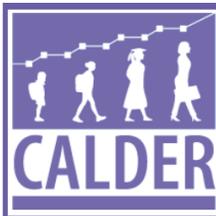
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[1] The “between school effects” combine average differences in teacher effectiveness between schools with any school-level effects.

[2] This last finding runs contrary to both the rhetoric and empirical evidence (see [CALDER working paper 2](#)) about the importance of workforce diversity.