# Investing in What it Takes to Move From Good to Great

## Exemplary Educators Identify Their Most Important Learning Experiences

**MAY 2017**

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# From Good to Great

## Exemplary Educators Identify Their Most Important Learning Experiences

**MAY 2017**

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# Executive Summary

For the last 4 years, 10 leading education organizations have collaborated on a study series that includes teacher voice in conversations and research about educator effectiveness. Initially conceptualized by teacher leaders from the National Network of State Teachers of the Year (NNSTOY) and with their continued input, the *From Good to Great* study series has asked exemplary teachers to share which professional supports and experiences helped them to increase their effectiveness as educators as they progressed through the various stages of their careers. There are multiple reasons why exemplary teachers' perspectives provide key insights for researchers and policy makers, including:

- **The need for smart investments in teacher development:** Schools, districts, and states allocate and distribute substantial funding to professional development for teachers and school improvement efforts every year, yet teachers often report that these funds could be better spent on professional learning that moves the needle on their effectiveness. By identifying the supports and experiences that exemplary teachers believe are most important for teacher development and effectiveness, leaders and policy makers can make smart investments that may be more likely to improve teaching and learning over time.

- **The need for teacher voice in policy:** There are countless examples of well-intended policies that failed to lead to improved teaching and learning; in many cases, these policies may have been better refined or implemented had exemplary teachers been included in the process. By sharing teacher perspectives and working directly with teacher researchers throughout the study series, we aim to highlight how teacher voice can provide meaningful insights into policy and teacher support structures.

As states and districts make decisions about how best to invest their professional development resources, including those made available under the Every Student Succeeds Act (ESSA), this report offers timely information to ensure scarce resources are used most wisely across the teacher career continuum to help teachers go from good to great.

This report (the third in the study series) summarizes the findings from a 2016 survey of National Board Certified Teachers (NBCTs) and builds on the results of a similar survey of State and National Teachers of the Year in 2013–2014. What we found largely confirmed the findings across the career continuum in the earlier, smaller-scale survey. Namely,

- At the **preservice** stage, we once again saw respondents ranking a high-quality final clinical practicum, or student teaching, as by far the most important experience. What makes the final clinical practicum so useful was also the same across these two surveys: a cooperating teacher that was effective both with students and effective as an adult mentor.

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- For **novice** teachers, this study again confirmed what we learned from State Teachers of the Year (STOYs): that an effective school principal and mentors (both assigned and informal) rose to the top of the list, with appropriate school placements and common planning time following close behind.

- The **career** stage teacher findings also mirrored what we saw in the earlier iteration of this work. National Board Certification and other ongoing formal education (such as graduate coursework) were seen as the most important experiences, followed by self-chosen professional development outside of the school district and collaboration with peers.

- At the **teacher leader** stage, as with the 2013–14 survey, the NBCTs surveyed thought serving as a mentor or coach was most important for helping them continue to improve their practice, even after they had already been established as effective teachers.

These findings call attention to the need for applied learning opportunities for early-career teachers, opportunities for collaboration across the career continuum, and teacher leadership. Other themes that emerged from this survey included the importance of a full-year final clinical practicum and teacher choice in ongoing professional development options, including teacher leadership roles.

## The Study Series in Brief

*"From Good to Great" (2013–2014)*

- The survey instrument was developed collaboratively by the partner organizations (including two teacher researchers) and reviewed and refined based on focus groups with 2013 State Teachers of the Year (STOYs).

- The report shared survey results from 311 State and National Teachers of the Year.

- The findings emphasized the importance of applied coursework, mentoring, supportive school leadership, ongoing development opportunities, and teacher leadership.

*"Great to Influential" (2016)*

- The focus group protocol was based on findings from the 2013–2014 report about the role of teacher leadership across the career continuum.

- The report shared findings from nine focus groups with 59 STOYs and three STOY finalists from across the United States.

- The findings explained the role of teacher leadership across the career continuum, which included: promoting a growth mindset, promoting collaboration and self-reflection, connecting research to practice, modeling effective teaching practices, and promoting instructional risk taking. The findings also explored supports and barriers to teacher leadership.

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*"Investing in What it Takes to Move From Good to Great" (2016–2017)*

- The survey was based on a similar instrument used to gather data for the 2013–2014 report and amended to include additional items on teacher leadership.
- The report shares findings from 5,796 National Board Certified Teachers.
- The findings corroborate the findings from the first and second reports, with additional findings highlighting the importance of collaboration with peers.

## About the Study Series

This report is the third in a series from a collaboration of 10 leading organizations working to advance teaching and elevate the profession. Initiated by the National Network of State Teachers of the Year (NNSTOY), the partner organizations include

- American Association of Colleges for Teacher Education (AACTE)
- American Federation of Teachers (AFT)
- Council for the Accreditation of Educator Preparation (CAEP)
- Council of Chief State School Officers (CCSSO)
- Center on Great Teachers and Leaders (GTL Center)
- Learning Forward
- National Board for Professional Teaching Standards (NBPTS)
- National Council on Teacher Quality (NCTQ)
- National Education Association (NEA)
- National Network of State Teachers of the Year (NNSTOY)

The first report ("From Good to Great") and the second report ("Great to Influential") were led collaboratively by NNSTOY and the Center on Great Teachers and Leaders (GTL Center). This third report was developed and led collaboratively by the GTL Center, NBPTS, and NNSTOY. In addition, representatives from each partner organization and many teacher leaders nationwide contributed to the design, analysis, interpretation of results, and policy recommendations included in this report.

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## Who Are National Board Certified Teachers (NBCTs)?

NBCTs have demonstrated accomplished teaching practice through National Board Certification, an advanced, voluntary professional certification for teachers with at least 3 years of teaching experience. Designed to identify and recognize accomplished teachers, National Board Certification is used by districts and states nationwide to develop and retain teachers and to generate ongoing improvement in schools. To achieve Board certification, teachers must submit evidence of the advanced knowledge, skills, and practices required by the National Board Standards in the content area and student developmental level in which they specialize. Written by committees of practicing teachers and other experts, these standards represent a consensus among educators about what accomplished, effective teachers should know and be able to do to improve student learning and achievement. Board certification is available in 25 certificate areas, from Pre–K through 12th grade. Certification consists of four components: assessment of content knowledge, reflection on student work samples, video and analysis of teaching practice, and documentation of the impact of assessment and collaboration on student learning (NBPTS, 2016).

## Introduction

Great teachers are the key to student success. Not only are effective teachers the most important school-based factor affecting student achievement (Darling-Hammond, 2000; Kane & Staiger, 2008; McCaffrey, Lockwood, Koretz, & Hamilton, 2003; Rothstein, 2010), but research also estimates that teachers impact students' lifetime earnings by 10%–20%, which has the potential to increase the U.S. gross domestic product by tens of trillions of dollars (Hanushek, 2011).

Clearly, investing in teacher quality can pay off—but what is less clear is how best to invest in the myriad approaches available for developing teacher talent. Securing a world-class teaching force requires not only investments in teachers' professional learning and growth opportunities but also across the policy spectrum, including higher teacher salaries, strategic recruitment and retention initiatives, improved school climate, and enhanced infrastructure. As states and districts revisit their approaches to supporting excellent educators, they have the opportunity to consider the relative return on these investments and chart a course to wisely invest resources to ensure excellent educators for all students.

For districts, professional development is a major investment. TNTP estimates that districts spend $18,000 *per teacher per year* on professional development, with the largest 50 school districts across the country allocating at least $8 billion to teacher development each year (including federal funding through Title II) (Jacob, 2015). Yet too often we hear that professional development does not help teachers improve (Garet et al., 2011; Jacob,

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2015). This study series attempts to shed light on the experiences at each stage of a teacher's career that *do* really matter by asking exemplary teachers about the most important supports and experiences across their careers—from the preservice stage through the novice, career, and teacher leader stages. Using data from our national survey of 5,796 National Board Certified Teachers, we examined the relative importance of professional learning opportunities and supports, with the goal of guiding policy leaders to invest in what it takes to move teachers from good to great.

## Exemplary Teachers' Perspectives Across the Study Series

The previous two reports in this study series focused on the perspectives of State and National Teachers of the Year (STOYs). In the first report, which shared the perspectives of 311 STOYs, we outlined two possible continuations of the work: a deeper qualitative exploration of the survey results through focus groups, or an additional survey of a different population of exemplary teachers. The second report in this series, *Great to Influential*, explored the former through focus groups with 59 STOYs and three STOY finalists in 26 states, the Department of Defense Education Activity (DoDEA), and the District of Columbia. In this third report, we sought to discover whether a different, broader population of exemplary teachers might share similar or differing perspectives than the original cohort of STOYs. In collaboration with the National Board for Professional Teaching Standards, we asked National Board Certified Teachers (NBCTs) to share their perspectives on the most important supports and experiences for teacher development and effectiveness as well as further insights into teacher leadership based on the findings of the second report.

The findings in this report are organized into four sections based on the stages of the teacher career continuum: preservice, novice, career, and teacher leader. Each of these sections includes policy and program considerations.[1] Because policies developed with stakeholder input are more likely to take hold (and meet their intended objectives) (Borman, Hewes, Overman, & Brown, 2004; Wallner, 2008; Yaro, Arshad, & Salleh, 2017), these policy and program considerations were crafted with feedback from the many teacher researchers and teacher leaders who contributed to this report. The report concludes with broad considerations for leaders and decision makers at all levels on how they may actively use these findings to spark conversations, make smart investments, and build systems that promote better teaching and learning.

This report includes a list of additional resources on this topic and a more detailed discussion of the study methodology in Appendix A. Other additional resources, including the survey instrument, survey data summary, and a discussion starter tool to support local conversations can be found on the study series website (http://www.gtlcenter.org/goodtogreat).

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[1] These considerations provide examples of action steps that policy makers and leaders can take at the school, district, and state levels. These action steps may or may not require revisions to state and local policies, statutes, or bargaining agreements.

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# Methodology

Our study series focuses on the teacher supports and experiences that contributed to their effectiveness across the career continuum. We define the term "effective" loosely, given that all NBCTs have met nationally agreed-upon criteria for accomplished teaching, as outlined in the National Board's Five Core Propositions for what teachers should know and be able to do. In addition, the survey items allowed NBCTs to interpret the term "effective" in their own way. The four stages of the career continuum used to organize the study were based on the Dreyfus and Dreyfus (1986) model and are shown in Figure 1.

**Figure 1. The Continuum of Professional Practice Development**



**Preservice Stage** |
The period of teachers' careers when they were learning how to teach

**Novice Stage** |
Years 1–5 as teachers of record

**Career Stage** |
Year 6 and on, having reached a certain level of mastery but before taking on significant leadership roles

**Teacher Leader Stage** |
The point at which career teachers assume teacher leadership responsibilities, contributing to instructional, policy, and organizational leadership

Our survey sought to answer one overarching research question: what do NBCTs consider to be the most important supports and experiences that contributed to their own effectiveness as teachers at each stage of the career continuum? We further considered how NBCT perspectives were similar to or different from the existing research on this subject. Due to differences in the survey design, respondent group, and time between studies, we were not able to directly compare the results from the earlier survey of STOYs to this survey of NBCTs. We can, however, discuss how these findings may reflect on prior research including but not limited to the first report in this series.

The survey was collaboratively developed by all of the partner organizations and closely modeled on the survey used in the 2014 report, *From Good to Great: Exemplary Teachers Share Perspectives on Increasing Teacher Effectiveness Across the Career Continuum*. Many of the survey items followed a "skip logic" pattern:

- Respondents were first asked to identify the professional supports and experiences they had at each stage of the career continuum.

- Next, respondents were asked to choose their top three most important supports and experiences; if a respondent did not indicate that they had a specific support or experience, then they were not able to select it as one of their top three supports or experiences.

- We then calculated the percentage of all respondents that ranked each support or experience as either the first, second, or third most important. In the report,

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we refer to this as the percentage of NBCTs who ranked each support or experience as "most important." It is important to note that this "most important" calculation represents a "percent of a percent," or the percent of the NBCTs who had a support that was also ranked in their top three most important.

In total, 5,796 NBCTs completed the survey, representing the full spectrum of subject areas taught, types of school locations (urban, rural, and suburban), school poverty levels, and grade levels. However, there are some limitations to these results: many respondents had more education overall than other NBCTs invited to participate in the survey. Likewise, the 5,796 respondents represent only about 7% of all NBCTs across the country. Readers should be cautious about generalizing these results to the full population of NBCTs across the country. However, given that they are consistent with our 2014 findings and much of the research literature on teacher development, we believe these results can still spark meaningful conversations among leaders and policy makers about making smart investments in teacher development and support.

# Findings Across the Career Continuum

## Preservice Stage

Preservice experiences have a lasting impact on teachers' careers and continue to be a major part of national conversations around education policy, from addressing the educator pipeline, commissions on teacher preparation, to new Higher Education Act regulations. When teachers are well-prepared to enter the profession, they are more likely to stay in the profession; well-prepared teachers also tend to promote better student learning over time than those whose preservice experiences are less robust (American Association of Colleges for Teacher Education, 2013). The preservice experience can help teacher candidates reframe their own observations of teaching as a student, emphasizing best practices rather than the unintentional replication of past teacher's approaches (Kennedy, 1999). States have also recognized the potential benefits of improving teacher preparation programs: they were by far the most common strategy for ensuring excellent educators for all students cited in 2015 state equity plans (Williams, Adrien, Murthy, & Pietryka, 2016).

Yet there is much we do not know about preservice experiences. Large-scale quantitative studies have not yet found major differences in teacher effectiveness across preparation programs (von Hippel, Bellows, Osborne, Lincove, & Mills, 2016), and the research on the effectiveness of preservice programs is mixed (DeMonte, 2015). The many different components of teacher preparation can also make it difficult to pinpoint the specific ways in which these programs help teacher candidates become well-prepared for teaching careers. Prospective teachers collectively spend about $4.8 billion on preservice training and education, and those resources ought to be spent right (Mitchel & King, 2016).

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We sought to better understand the value of various preservice experiences in this study. Recognizing that nearly 50% of our survey respondents had more than 20 years of teaching experience (and were reflecting back on their experiences from many years ago), we asked NBCTs to identify the most important elements of the preservice stage of their careers.

## Most Important Preservice Stage Supports:

- High-quality final clinical practicum, including effective cooperating teachers
- Applied learning
- Content coursework

By far, the NBCTs surveyed indicated that the most important support in this first stage of their career was a high-quality final clinical practicum, also referred to as an internship or student teaching. Eighty-eight percent of respondents had a final clinical practicum in the preservice stage and nearly 80% of respondents included it in their top three list of most important supports—more than 20 percentage points higher than any other support. The second most important support—applied coursework on specific skills—further emphasizes the importance of applied, hands-on training. These findings echo many other studies on the importance of applied learning in preservice training, including the 2014 *Good to Great* report (Behrstock-Sherratt, Bassett, Olson, & Jacques, 2014; DeMonte, 2015; National Research Council, 2010). The third most important support was content coursework (see Figure 2).

**Figure 2. Q13: Most Important Preservice Supports and Experiences**

Percentage Who Received Support

| Support | Percentage Ranking the Support Among the Three Most Effective | Percentage Who Received Support |
|---|---|---|
| A final clinical practicum that was of high quality | 78.64 | 87.78 |
| Applied coursework on specific skills | 55.23 | 72.74 |
| Content coursework in my certification area | 47.93 | 93.19 |
| An assigned cooperating teacher during a final clinical practicum | 43.60 | 72.74 |
| Fieldwork preceding a final clinical practicum/full-time classroom experience | 38.95 | 80.28 |
| Instruction by professors with recent, relevant PK–12 teaching experience | 33.78 | 53.27 |
| Pedagogy-related coursework | 30.46 | 89.70 |
| Instruction by professors with a deep, theoretical understanding of instruction | 18.12 | 80.64 |
| Theoretical coursework | 17.79 | 82.12 |

Percentage Ranking the Support Among the Three Most Effective

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## Unpacking the Clinical Practicum

Given the clear importance of providing preservice teachers with a high-quality clinical practicum, what are the criteria that are essential for the practicum experience to set new teachers off on a strong start? New research on this topic is continually emerging. In 2010, the National Council for Accreditation of Teacher Education (NCATE) developed 10 design principles for high-quality clinical practicums, and a few models of clinical practicums have been widely recognized as high quality (including those developed by the National Association of Professional Development Schools and the National Center for Teacher Residencies) (American Association of Colleges for Teacher Education, 2016). To contribute to this body of knowledge, we asked NBCTs to identify the specific aspects of their clinical practicum that were most important for their development. Although large numbers of the NBCTs surveyed gave high ratings to specific programmatic elements (e.g., written feedback from observations, a full-year clinical practicum), survey data indicated that the most important aspect of the clinical practicum was working with an effective cooperating teacher or even multiple cooperating teachers. It is significant that these cooperating teachers demonstrated effectiveness both with their students and as adult mentors.

**Figure 3. Q15: Most Important Preservice Supports as Part of High-Quality Clinical Practicum**



Percentage Who Received Support

| Support | Percentage Ranking the Support Among the Three Most Effective | Percentage Who Received Support |
|---|---|---|
| I had a cooperating teacher who was effective in promoting student learning. | 79.51 | 90.58 |
| I had a cooperating teacher who was an effective adult mentor. | 68.42 | 88.16 |
| I had opportunities to learn from multiple cooperating teachers. | 54.56 | 64.32 |
| I received written feedback from observations. | 46.65 | 86.50 |
| My final clinical practicum lasted 1 full school year. | 44.43 | 16.72 |
| My final clinical practicum involved videotaping myself and reviewing/discussing/reflecting on myself as a teacher. | 32.16 | 26.56 |
| My final clinical practicum involved co-teaching. | 31.68 | 52.43 |
| My final clinical practicum included observations from my university supervisor. | 20.67 | 90.04 |
| My final clinical practicum was preceded by early clinical experiences before or at the start of my coursework. | 15.64 | 79.90 |
| My final clinical practicum included multiple placements. | 9.82 | 41.80 |
| My final clinical practicum involved observations conducted by clinical supervisors. | 6.62 | 68.18 |
| My final clinical practicum involved simulations. | 6.50 | 13.36 |

Percentage Ranking the Support Among the Three Most Effective

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## The Importance of Cooperating Teachers

The findings shown in Figure 3 corroborate the survey findings from our 2014 *From Good to Great* report. In our 2016 report, *Great to Influential: Teacher Leaders' Roles in Supporting Instruction*, we explored how interactions and collaboration with a cooperating teacher can help preservice teachers to gain skills that will help them become more effective over time. We found that cooperating teachers help preservice candidates master the skills needed to adjust instruction over time (promoting better teaching over time).

Digging deeper into the qualities of effective cooperating teachers, we asked NBCTs (who rated highly having a cooperating teacher who was effective at promoting student learning or who was an effective adult mentor) to identify the most important qualifications needed to take on this role.[2] As was the case in our 2014 report, the most important qualification by far was simply having sufficient teaching experience (defined as 5 years or more), which more than 30 percent of respondents rated above other important cooperating teacher qualifications such as teaching in one's same subject area and grade (see Figure 4). This support may reflect a need for cooperating teachers to build confidence in their practice or simply gain experiential knowledge of working with different types of students and situations. This finding may have implications for how to ensure effective and experienced teachers are available in all schools. These findings may also have implications for other initiatives aimed at recruiting and retaining effective and experienced educators, including equitable access initiatives.

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[2] One interesting consideration that could not be explored with the data was whether NBCTs themselves make for effective cooperating teachers. Only 3.90% of respondents indicated that they had a cooperating teacher who achieved National Board Certification. It is possible that the fact that the majority of respondents had a small volume of NBCTs and STOYs during their preservice years may have affected the rankings. For example, there were very few (i.e., <500 nationwide) NBCTs when most of the respondents where in the preservice stage. In fact, when compared with the general teaching population at that time, NBCTs represented just 0.01% of all teachers, thereby making it near impossible for the respondents to have had an NBCT as a cooperating teacher. A recent census by NBPTS identified 12,931 NBCTs (of the more than 25,000 who responded to the census) who served as cooperating teachers, a steep increase when compared with the time the respondents of this survey were in the preservice stage of their careers.

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**Figure 4. Q16: Most Important Qualifications and Experiences of Effective Cooperating Teachers**



| Category | Value |
|---|---|
| The cooperating teacher had at least 5 years of teaching experience at the time they served as my cooperating teacher. | 80.94 |
| The cooperating teacher taught in the same subject area as I did. | 50.26 |
| The cooperating teacher taught in the same grade level as I did. | 46.43 |
| The cooperating teacher taught in the same field as I did. | 35.77 |
| The cooperating teacher had a teacher leader role in the school. | 32.58 |
| The cooperating teacher received training for their role as a cooperating teacher. | 28.29 |
| Other | 12.57 |
| The cooperating teacher achieved National Board Certification. | 3.90 |
| The cooperating teacher received an esteemed recognition (e.g., Milken or STOY) at the same time they served as my cooperating teacher. | 2.36 |

Percentage Ranking the Support Among the Three Most Effective

## Content Expertise Matters

The second, third, and fourth most important qualifications and experiences all focused on the specific content area or grade-level expertise of the cooperating teacher. Just as the third most important support for the preservice stage overall was content coursework, these findings may emphasize the importance of content knowledge in preservice teacher development.

These findings raise questions for future researchers, such as how content knowledge, experience, and expertise facilitate effective learning and interactions between cooperating and preservice teachers. They also offer some considerations for policies and programs.

## Policy and Program Considerations

For policy makers at the state and district level and teacher preparation programs who are assessing their preservice education programs and their costs, several important considerations emerge from this report:

- **Build partnerships to promote applied learning.** Teacher preparation programs and local school districts should build and strengthen their partnerships to ensure every preservice candidate can gain practical experience and knowledge before entering the classroom. These partnerships may include live (or virtual) observations of local teachers by preservice candidates (such as TeachLivE) or opportunities for local teachers to share advice with candidates on real classroom conditions and best practices. Partnerships may also help teacher candidates connect with diverse teachers working in a variety of settings, especially in more rural areas.

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- **Build a strong cadre of cooperating teachers.** Local school districts should craft policies to ensure they have enough and enough of a variety (in terms of subject area and grade level) of high-quality cooperating teachers ready to work with preservice teachers. In selecting cooperating teachers, a minimum of 5 years of experience should be the first requirement. Recruiting this cadre may require greater flexibility and choice for teachers taking on the role, so that effective teachers do not have to worry about the burden of it being the "wrong fit." Cooperating teachers can also benefit from training on the responsibilities of their role that focuses on specific skills, such as how to work with adult learners and how to give effective feedback. This training could be provided by teacher preparation programs or by school districts.

- **Make the role of cooperating teacher more appealing.** Districts may also be able to boost the number and quality of cooperating teachers by ensuring that the role includes sufficient time to work with preservice candidates, perhaps through a reduced course load or release time for the cooperating teacher. Larger school districts may be able to support schools that are specifically designed as a placement for preservice and novice candidates, similar to the teaching hospital model in the medical field.

Because cooperating teachers may have concerns about the impact that a preservice teacher might have on their evaluation scores, cooperating teachers might also benefit from having a more focused evaluation that prioritizes their support for the preservice teacher rather than their performance alone.

Teacher preparation programs may consider offering reciprocity agreements that allow cooperating teachers to take a free course or access school research databases, or offer small stipends to cooperating teachers who are willing to serve as a visiting professor for a few classes over the course of the year. This is a small investment that can lead to better engagement with schools and exemplary teachers in nearby districts.

## Novice Stage

Research on mentoring novice teachers has consistently shown a positive impact on teacher effectiveness (and retention) (Bouchamma, Savoie, & Basque, 2012; Ingersoll & Smith, 2004; Ingersoll & Strong, 2011). In addition to these educational benefits, the New Teacher Center found that every dollar invested in a high-quality induction and mentoring program produces a financial return of $3.61 for teachers, $1.88 for districts, and $0.98 for the state (Villar & Strong, 2007).

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## Most Important Novice Stage Supports:

- A highly supportive principal
- Access to an informal mentor
- Access to an assigned mentor

Our findings in both the 2014 report and this report show that exemplary teachers agree that investing in high-quality mentoring is likely to pay off. The survey results lend further evidence of the importance of interpersonal supports and experiences at the novice stage. The top three most important supports at the novice stage were a highly supportive principal and access to mentors (both assigned and informal) (see Figure 5).

**Figure 5. Q19: Most Important Novice Supports and Experiences**

Percentage Who Received Support

| Support | Percentage Ranking | Percentage Who Received Support |
|---|---|---|
| I had a highly supportive principal. | 54.07 | 68.81 |
| I had access to an informal mentor. | 51.36 | 70.92 |
| I had access to an assigned mentor. | 49.53 | 48.54 |
| I had a school placement that aligned with my talents, training, or certification. | 46.55 | 87.52 |
| I had common planning time with other teachers. | 42.07 | 48.88 |
| I conducted continued coursework on a master's degree. | 33.40 | 52.50 |
| I attended new teacher workshops, trainings, or seminars on specific cross-content pedagogical issues such as classroom management, college- and career-ready standards, understanding of state teaching standards, or working with special student populations. | 31.07 | 56.37 |
| I attended new teacher workshops, trainings, or seminars in my content area. | 30.50 | 65.29 |
| I participated in professional conferences. | 24.35 | 77.28 |
| I participated in a professional learning community. | 23.76 | 50.44 |
| I had structured activities around frameworks such as the National Board for Professional Teaching Standards. | 21.51 | 23.18 |
| I developed my own professional growth plan. | 19.99 | 69.53 |
| I attended an orientation program that sufficiently acquainted me with school policies and protocols from Day 1. | 14.38 | 50.75 |
| I engaged in professional organizations. | 13.30 | 71.30 |
| I had formal opportunities for self-reflection. | 12.25 | 46.28 |
| I had a formal evaluation that included observations of professional practice and/or artifact review. | 11.82 | 76.48 |
| I received ongoing support from my preparation program. | 11.81 | 27.56 |
| Other | 10.20 | 26.86 |
| I had a formal evaluation that included student growth or achievement outcomes. | 8.46 | 44.94 |
| I participated in data analysis teams. | 7.49 | 32.33 |

Percentage Ranking the Support Among the Three Most Effective

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## The Importance of High-Quality Principals

Existing research emphasizes the importance of school principals for all teachers (Coelli & Green, 2012; Le Floch et al., 2014; Leithwood, Louis, Anderson, & Wahlstrom, 2004; Louis, Leithwood, Wahlstrom, & Anderson, 2010; Manna, 2015) but a highly supportive principal may be especially helpful at the novice stage by connecting novice teachers with informal mentors and adjusting professional learning supports to meet teachers' needs at this stage. These specific actions and the way in which they impact day-to-day working conditions may not only help novice teachers to become more effective, but they may also make addressing the day-to-day challenges of teaching (such as an unsuccessful lesson or disengaged students) less daunting or stressful. This finding corroborates existing literature and the findings from our 2014 report.

## The Importance of High-Quality Mentors

The second and third most important supports at the novice stage were access to assigned mentors and access to informal mentors. Although more respondents indicated that they had an informal mentor than a formal mentor, both types of mentors were rated of similar importance. To better understand the qualities of mentors that are most helpful for improving novice teacher effectiveness, we asked NBCTs to identify the most important qualifications for both assigned and informal mentors. The most important qualification for both assigned and formal mentors was providing helpful support and advice. Also, like cooperating teachers at the preservice stage, NBCTs indicated that being in the same grade level or subject area were among the most important mentor qualities. NBCTs also ranked having sufficient time to spend with their mentors as the third most important qualification for both assigned and informal mentors, indicating that the quality of support may be related to the amount of time available for mentoring activities (see Figures 6 and 7).

**Figure 6. Q21: Most Important Assigned Mentor Qualifications**



Percentage Who Received Support

| Qualification | Percentage Ranking the Support Among the Three Most Effective | Percentage Who Received Support |
|---|---|---|
| My assigned mentor provided me with helpful support/advice. | 82.67 | 87.90 |
| My assigned mentor was in the same subject area or grade level as I was. | 75.94 | 70.26 |
| My assigned mentor had sufficient time to spend with me. | 73.15 | 65.48 |
| My assigned mentor modeled effective teaching practices for me in a live classroom setting. | 60.46 | 55.55 |
| My assigned mentor was in close proximity within my school. | 51.90 | 79.71 |
| My assigned mentor had previous mentoring experience. | 35.68 | 77.94 |

Percentage Ranking the Support Among the Three Most Effective

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**Figure 7. Q23: Most Important Informal Mentor Qualifications**

Percentage Who
Received Support

| Qualification | Percentage Ranking | Received Support |
|---|---|---|
| My informal mentor provided me with helpful support or advice. | 84.07 | 97.62 |
| My informal mentor was in the same subject area or grade level as I was. | 75.77 | 88.41 |
| My informal mentor had sufficient time to spend with me. | 64.49 | 75.84 |
| My informal mentor modeled effective teaching practices for me. | 64.29 | 70.74 |
| My informal mentor was in close physical proximity within my school. | 53.97 | 70.64 |
| My informal mentor had previous mentoring experience. | 21.04 | 57.39 |

0    20    40    60    80    100

Percentage Ranking the Support Among the Three Most Effective

## Policy and Program Considerations

These findings further emphasize what is seen in other literature on this topic—namely, that investing in high-quality induction and mentoring and having a highly supportive school principal are important. Determining precisely how to best ensure new teachers have these supports becomes the question. Three policy considerations can offer some guidance:

- **Make mentoring more flexible and accessible.** It is clear that mentoring matters in the novice years, but many mentors have the same experiences as cooperating teachers in that they have little choice or flexibility in their role. Local schools may be able to recruit more mentors (and more effective mentors) by allowing these expert teachers to indicate their preferences for specific classes, working style, and amount of time spent with the novice teacher. Effective teachers may also be more inclined to take on mentoring roles if there are specific protections articulated around scheduling (such as releasing mentors from study hall or cafeteria duties) that provide more time for mentoring activities.

- **Create more opportunities for strong mentor-mentee matches.** Because mentors may not be available in all content areas or have expertise in all approaches, districts may consider providing novice teachers with a cohort of mentors (including an assigned mentor and other more informal mentors) so they can see different models of teaching and receive expert advice in their specific content area(s). Novice teachers may also be able to connect virtually with a network of mentors to ask questions and seek advice beyond that of their assigned, in-person mentor. Virtual mentoring programs and communities such as TeachingPartners may also help to ensure that teachers in specialized roles or in rural communities can access appropriately qualified mentors. These systems would need to be strategically developed, however, to ensure novice teachers are not overwhelmed by feedback from multiple teacher leaders or administrators.

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■ **Remove disincentives for effective educators to become mentors.** As with cooperating teachers, it may also be helpful for mentor teachers to undergo a different type of evaluation in the years in which they serve as a mentor, focusing on their overall impact on student learning, areas for refinement, and their work supporting novice teachers. Districts may also incentivize mentoring roles as a teacher leadership position, including offering mentors a greater role in school leadership decisions and additional compensation.

## Career Stage

Ongoing professional learning for teachers in the career stage represents a significant source of school spending. A number of researchers have estimated its costs. Some suggest that professional development costs school districts $18,000 per teacher per year, or up to 5% of classroom expenditures (Jacob 2015; Odden, Archibald, Fermanich, & Gallagher, 2002). Other researchers have estimated that specific types of professional development, such as instructional coaching programs, can cost $3,260 to $5,220 per teacher per year (Knight, 2012). Meanwhile, master's programs can cost teachers approximately $10,000 to $50,000 (depending on the program) but may also lead to higher earnings over the course of a teaching career that exceed the cost of the program (ChalkTalk, 2008; Chingos, 2014). Likewise, National Board Certification costs $1,900 but often results in higher earnings for teachers over time (NBPTS, 2017).

### Most Important Career Stage Supports:

- Ongoing formal education
- A specific group of peers with whom to regularly collaborate
- Self-selected professional development from experts outside the district

To ensure these dollars are spent most prudently, we asked NBCTs which ongoing supports and experiences meaningfully contributed to their effectiveness during the career stage. The top three most important supports reflected activities where teachers had some choice about participation and/or content and an element of self-directed learning. Specifically, ongoing formal education (including the National Board Certification process), regular collaboration with peers, and self-selected professional development were the three highest rated supports, followed closely by professional learning communities (or other collaborative activities with other teachers) and a collegial and collaborative school culture (see Figure 8). These findings also corroborate those in our 2014 report.

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**Figure 8. Q25: Most Important Career Stage Supports and Experiences**

Percentage Who
Received Support

| Support | Percentage Ranking | Percentage Who Received Support |
|---|---|---|
| I have received ongoing formal education. | 43.42 | 88.23 |
| I have had a specific group of peers with whom to regularly collaborate. | 39.56 | 90.07 |
| I have received professional development on a topic that I chose from experts working outside the district. | 36.16 | 85.95 |
| I have participated in professional learning communities/collaboration activities with other teachers. | 35.16 | 95.86 |
| I have had a collegial, collaborative school culture and colleagues. | 35.11 | 89.41 |
| I have had access to supportive school leadership. | 27.09 | 84.99 |
| I have had a working environment that has encouraged emerging leadership roles for teachers beyond our classrooms. | 21.76 | 80.21 |
| I have had ongoing official or unofficial mentors to guide me through new experiences. | 21.58 | 65.85 |
| I have taught on a team with a teacher leader jointly accountable for my students' outcomes. | 18.44 | 45.65 |
| I have given formal presentations at conferences or events outside my school, district, or region. | 16.51 | 63.57 |
| I have received professional development delivered by teachers. | 15.52 | 95.47 |
| I have received actionable feedback through formal or informal observation or evaluation. | 13.54 | 86.67 |
| I have received school- or district-mandated professional development on a specific topic. | 13.52 | 95.62 |
| I have had school leaders who have orchestrated meaningful professional learning opportunities. | 11.48 | 76.98 |
| I have given formal presentations to peer groups or others within my school, district, or region. | 10.17 | 90.32 |
| Other | 6.91 | 40.34 |

Percentage Ranking the Support Among the Three Most Effective

## The Importance of Choice in Teacher Professional Learning

Given how highly rated formal ongoing education was in this survey and in our earlier survey of STOYs, we asked NBCTs to help unpack the different types of ongoing formal education they had (see Figure 9). National Board Certification was the most important ongoing formal education experience according to respondents. There are multiple studies which indicate that NBCTs promote more student learning than do non-NBCTs (Cavalluzzo et al., 2014; Cowan & Goldhaber, 2015; Strategic Data Project, 2012). This may highlight opportunities for more research to explore the impact of National Board certification.[3]

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[3] For example, it may be worthwhile to further explore whether it is the National Board Certification process itself (rather than characteristics of the individuals that pursue National Board Certification) that leads to this positive impact, and if so how the process does so.

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The second most highly ranked type of formal ongoing education was graduate-level coursework. This finding, which also emerged in the 2014 report, is especially interesting in light of the commonly cited research that finds graduate degrees do not have an impact on teacher effectiveness (Chingos & Peterson, 2010; Hanushek & Rivkin, 2006; Ladd and Sorensen, 2015). This raises interesting questions about when, how, and why graduate coursework might positively impact teacher effectiveness, or if it has other benefits for career stage teachers.

**Figure 9. Q27: Most Important Ongoing Formal Education**
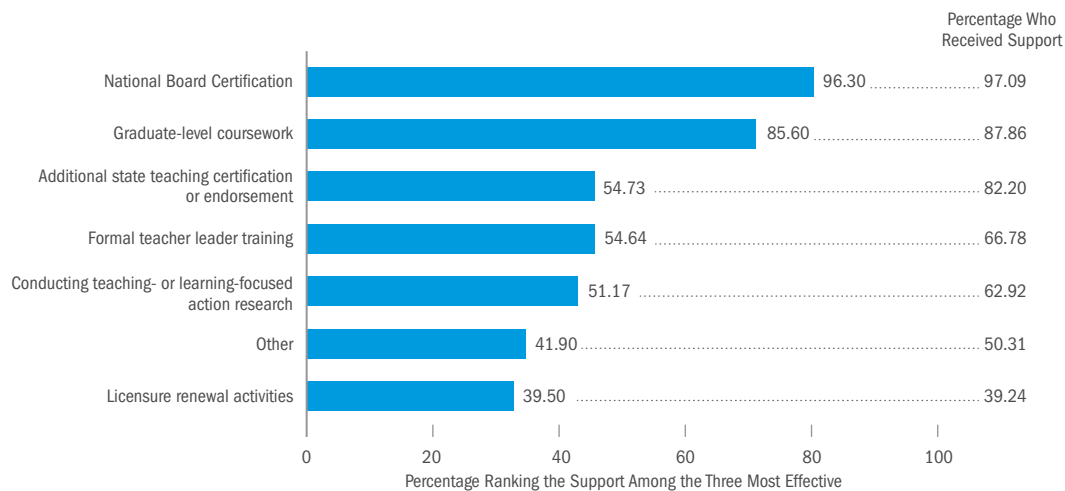


The NBCTs surveyed also highlighted the importance of choice in professional development. Nearly all survey respondents received mandated professional development, but very few respondents indicated that it was one of the most important supports. Self-selected professional development, however, was the third most important support. We asked NBCTs to identify the most important characteristics of both district-mandated and self-selected professional development to better understand what types of supports were most important at the career stage (see Figures 9 and 10). The top two most important characteristics for each type of professional development emphasized the importance of choice and application of learning: that the professional development be self-selected for relevance and grounded in day-to-day teaching practice. This reflects previous research on how long-term professional development can have a greater impact on student learning than short-term trainings or workshops (Coggshall, Rasmussen, Colton, Milton, & Jacques, 2012; Darling-Hammond et al., 2009). The third most important characteristic was professional development being led by teachers in the district.

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**Figure 10. Q28: Most Important School- or District-Mandated Professional Development Characteristics**



| | |
|---|---|
| The professional development is grounded in my day-to-day teaching practice. | 79.30 |
| The professional development is self-selected to be specifically relevant to me. | 68.83 |
| The professional development is led by other teachers in my school or district. | 43.00 |
| The professional development is sustained over a period of at least six months. | 34.81 |
| The professional development involves observing or being observed by peers. | 29.18 |
| The professional development involves at least two hours per week to practice the new skills and knowledge. | 12.50 |

Percentage Ranking the Support Among the Three Most Effective

**Figure 11. Q29: Most Important External Self-Chosen Professional Development Characteristics**



| | |
|---|---|
| The professional development is self-selected to be specifically relevant to me. | 85.31 |
| The professional development is grounded in my day-to-day teaching practice. | 83.56 |
| The professional development is led by other teachers in my school or district. | 50.95 |
| The professional development is sustained over a period of at least six months. | 31.14 |
| The professional development involves at least two hours per week to practice the new skills and knowledge. | 14.88 |

Percentage Ranking the Support Among the Three Most Effective

## Collaboration With Colleagues

The second most important support or experience for the career stage overall was having a specific group of peers with whom to regularly collaborate; similarly, respondents indicated that it was important to have professional development led by other teachers from their school or district. In contrast, having a supportive principal was less highly rated. These findings may indicate some differences in teachers' needs across the career continuum: for instance, teachers at the career stage may value purposeful and meaningful collaboration with peers more than feedback from a mentor or principal because they have become more reflective and experienced practitioners. Rather than comparing these supports, however, it may be more beneficial to simply acknowledge the importance of collaboration opportunities for career stage teachers.

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## Policy and Program Considerations

Given how much is spent on professional development, it is worth taking into account the types of investments that effective teachers view as most critical. Policies related to ongoing teacher education and development may need to be refined to make professional learning over time more meaningful and efficient for teachers. Likewise, further research might help to better explain the value behind different ongoing supports for career teachers. For leaders at the state and district level who are considering how to refine support systems and requirements for experienced teachers, several policy considerations include:

- **Streamline and refine certification policies.** Because National Board Certification has been so highly ranked across the study series and in other recent research, it may be helpful to allow this certification to be included in licensure renewal or advancement requirements. As of now, 17 states[4] have already adopted these types of policies. Because collaboration with peers is so beneficial, local school districts may also be able to incentivize collaboration by allowing it to count as "clock hours" or credit toward license renewal. Overall, licensure policies may become more meaningful if they reflect more meaningful experiences, including National Board Certification, but also applied, self-selected professional learning.

- **Give teachers flexibility to self-select targeted professional development.** States and districts may allow teachers to have up to 3 days off for self-selected professional development so that they do not have to seek permission for release time whenever they find an opportunity for further development that meets their needs. States may also be able to support this by providing a list of state-approved professional development opportunities (such as workshops or work with experts) so that teachers can have flexibility without concerns about the rigor of these experiences. States and districts may allow even more teacher choice in professional development by creating individual professional development "spending accounts" that teachers may use for specific opportunities that have already been identified as useful (e.g., tools such as the Literacy Design Collaborative or Math Design Collaborative, or workshops on approaches such as project-based learning).

  Because many teachers who can self-select some professional development also have required district trainings or workshops, it may be important for districts to differentiate required professional development. Larger districts may be able to do this by differentiating professional learning at the network level with district support. Districts of any size may also be able to support school-based professional development through carefully designed collaboration structures (such as lesson study groups).

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4  Alabama, Arizona, Arkansas, California, Delaware, Florida, Indiana, Iowa, Kansas, Louisiana, Mississippi, North Carolina, Oregon, South Dakota, Washington, West Virginia, and Wyoming

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**Facilitate collaboration time or structures.** Local school districts may also be able to make collaboration easier by allotting time for teachers to participate in activities such as small data analysis teams or learning groups during the school day. Many schools use common planning time, early release afternoons, or strategic scheduling to find time for teachers to meet physically during the school day. Many successful examples of school-level collaboration have also leveraged technology, including ongoing discussion over Google documents, reflection on classroom videos, or collaboration with peers in other districts via video stream. One benefit of more virtual collaboration is that the evidence and progress can easily be shared with administrators or other members of an instructional leadership team.

## Teacher Leader Stage

In recent years, more and more districts and schools have looked to teacher leadership to support school improvement and promote a stable, effective teacher workforce. Not all teachers take on formal[5] or informal[6] teacher leadership roles in their careers; however, many experienced teachers seek teacher leadership roles at different points in their careers. One of the main findings from the previous reports in this series was that roles designed to help less experienced teachers improve (such as coaching or mentoring) also helped teacher leaders become better practitioners themselves. We asked NBCTs with more than 5 years of experience to indicate whether they had worked in a teacher leadership capacity and then asked them to identify which of these roles was most important for improving their practice (see Figure 12). Overall, these findings corroborate the findings from the 2014 and 2016 reports. Because teacher leadership is an emerging area of policy, we also asked additional questions in the survey about the barriers and supports for successfully designing teacher leadership initiatives as well as their perceived impact (see page 29).

### Most Important Teacher Leader Stage Supports:

- Serving as a mentor or instructional coach
- Organizing local projects or initiatives impacting student growth
- Serving on school or district leadership team

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[5] Teacher leader roles with a title, regular responsibilities, and (sometimes) additional compensation.

[6] Teacher leadership roles or activities without a formal title change or additional compensation.

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**Figure 12. Q31: Most Important Supports and Experiences at the Teacher Leader Stage**

Percentage Who
Received Support

| Support | Percentage Ranking | Percentage Who Received Support |
|---|---|---|
| I have become a mentor or instructional coach. | 35.53 | 76.38 |
| I have organized projects or initiatives that impact student growth and learning at the school, district, or community level. | 30.54 | 82.19 |
| I have served on a school or district leadership team. | 29.31 | 87.85 |
| I have taught teacher preparation at the university level. | 27.70 | 15.34 |
| I have conducted supervision of student teachers/teacher candidates. | 27.44 | 69.00 |
| I have or have had a role in which I maintained my classroom teaching responsibilities with added teacher leadership responsibilities. | 27.32 | 87.38 |
| I have conducted curriculum development. | 26.74 | 72.01 |
| I have delivered professional development activities. | 25.28 | 86.66 |
| I have participated in coursework or developed knowledge in advanced pedagogical practice. | 22.17 | 75.70 |
| I have provided formal coaching or mentoring to colleagues to improve their instructional practice. | 22.07 | 69.16 |
| I have or have had informal leadership roles in improving colleagues' instructional practice. | 22.06 | 83.91 |
| I have or have had a role in which I had reduced classroom teaching responsibilities with added teacher leadership responsibilities. | 20.25 | 28.26 |
| I have presented at conferences or to peer groups. | 19.92 | 74.96 |
| I have or have had a role in which I reached more students than normal by using blended learning. | 18.60 | 28.55 |
| I have assumed a department chairmanship. | 17.14 | 51.19 |
| I have or have had a role in which I reached more students than normal by leading a teaching team on which I was accountable for all student outcomes. | 15.44 | 29.35 |
| I have been involved in conducting or analyzing research. | 14.63 | 57.24 |
| I have conducted peer review observations of colleagues. | 14.50 | 63.63 |
| I have or have had formal leadership roles in which I was jointly accountable for colleagues' student outcomes while continuing to teach. | 14.38 | 34.41 |
| I have been observed by peers. | 14.30 | 86.28 |
| I have shared research findings with colleagues to inform professional learning or implementation of a new initiative. | 12.85 | 63.81 |
| Other | 5.86 | 39.38 |

Percentage Ranking the Support Among the Three Most Effective

Overall, NBCTs indicated that mentoring was the most important teacher leadership experience. These findings reflect those in the 2014 report, in which mentoring was the most important support at both the novice stage (i.e., having a mentor) and teacher leader stage (i.e., being a mentor). Our 2016 report also explored this finding, describing how mentor-mentee interactions promote improved practice for the mentors. Specifically, we found that mentoring can help already effective teachers refine their practice to be even more effective through reflection, collaboration, and willingness to take more instructional risks.

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Mentoring is not, however, the sole or majority standout role for teacher leaders, as many other experiences were seen as similarly useful for teacher leaders' continued improvement. Not all of these teacher leadership experiences were common, either. In fact, while 76% of respondents had served as mentors or instructional coaches, only 36% rated this as one of their most important experiences; by comparison, only 15% of respondents taught teacher preparation at the university level, but nearly 28% rated this as one of their most important experiences. This suggests that policy leaders should not narrow their focus to providing teacher leaders with mentoring roles; rather, a variety of teacher leadership positions may be beneficial. Having variety and flexibility in the teacher leadership roles available may also help leaders use teacher leadership more effectively to address specific local needs (Natale, Bassett, Gaddis, & McKnight, 2013). Further, a diversity of teacher leadership opportunities at the school, district, and state level can serve to reshape the profession and its image as a dynamic and exciting career choice for talented individuals who have many options.

## Perspectives on the Utility and Implementation of Teacher Leadership

Because teacher leadership is still a new policy area of focus, our survey asked about its perceived impact and the supports and barriers to its successful implementation. Although it is not clear from this survey that specific teacher leadership roles are more important than others, it is clear that teacher leaders believe teacher leadership impacts their career choices. Nearly four-fifths of NBCTs said it positively impacted their decision to remain in the classroom (see Figure 13).

**Figure 13. Q38. Has Your Teacher Leadership Role Positively Impacted Your Decision to Remain in a Teaching Position Where You Are Responsible for Teaching Students Directly?**
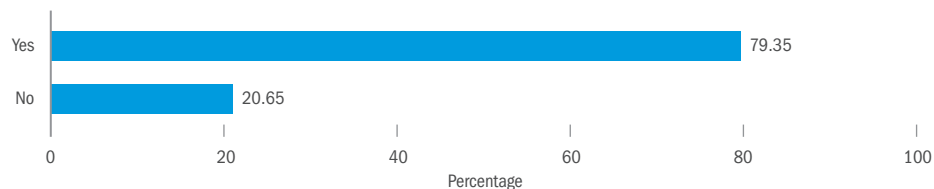


## Formal Teacher Leadership Supports and Barriers

Given that NBCTs see teacher leadership as having a positive impact, what are the supports and barriers for successful implementation? We asked NBCTs to rate the most important supports and barriers to teacher leadership (see Figures 14 and 15). Overall it is clear that having a supportive school leader is important, which is unsurprising given the role school leaders play in distributing leadership responsibilities and creating structures to support teacher leadership. Having time to engage in common teacher leadership activities, such as collaborating around instruction, was also both an important support and a potential barrier. Because having time to engage in teacher leadership is

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considered a basic condition for this role, this finding may indicate that many schools have not yet have made the necessary shifts in scheduling and other structural changes needed to support teacher leadership.

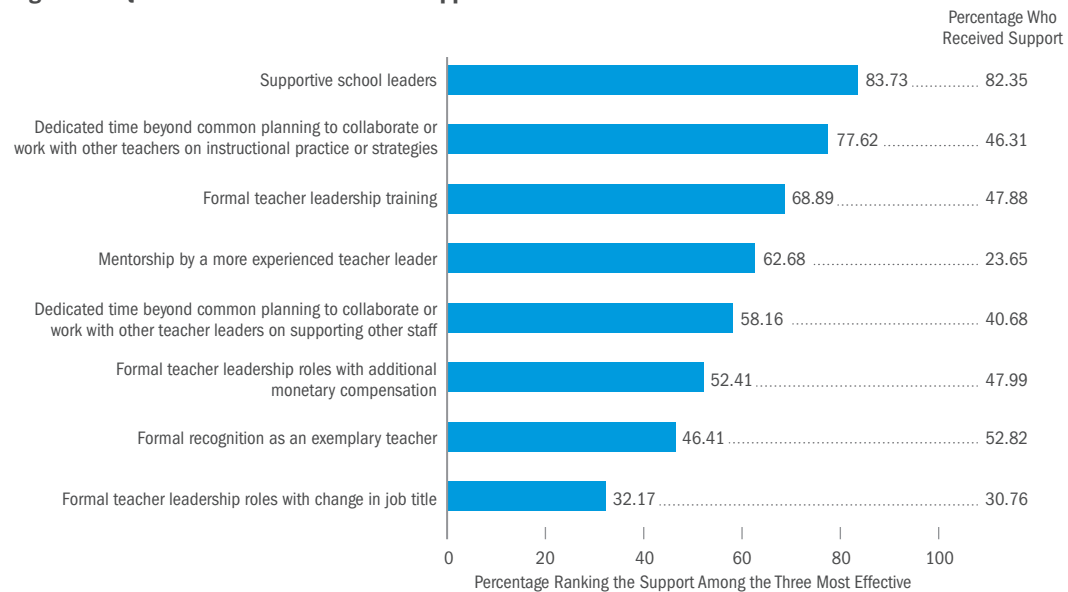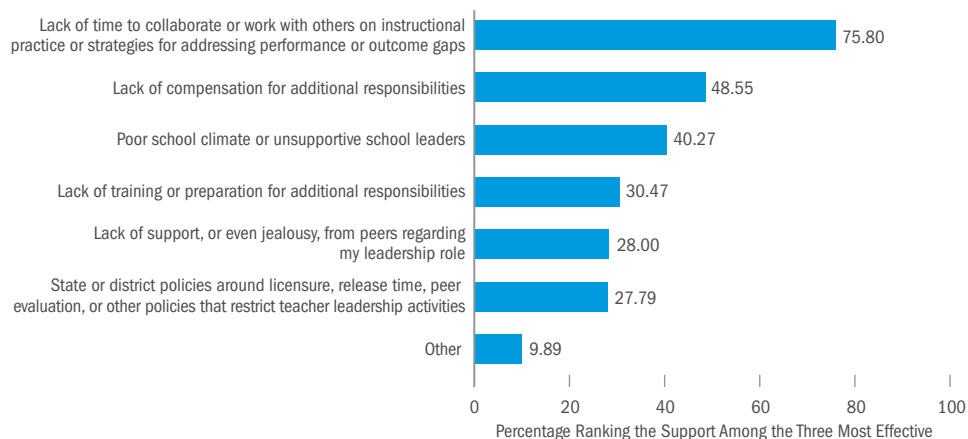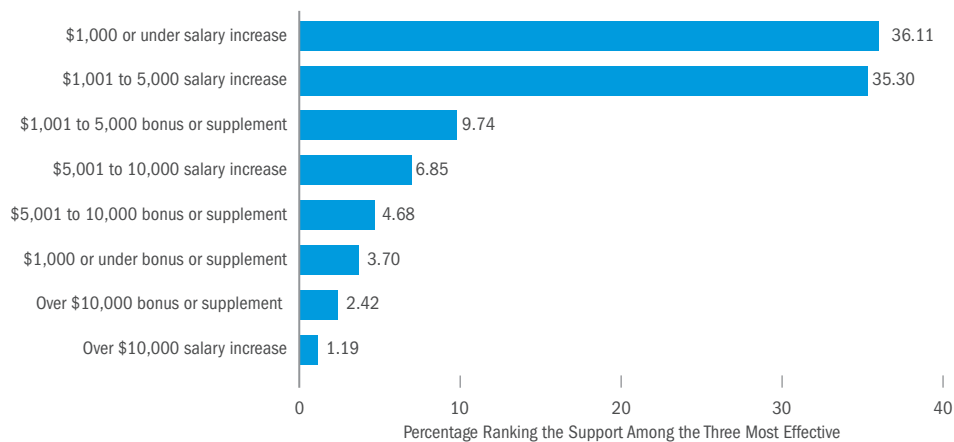**Figure 14. Q35: Formal Teacher Leader Supports**

Percentage Who
Received Support

| Support | Percentage Ranking Among Three Most Effective | Percentage Who Received Support |
|---|---|---|
| Supportive school leaders | 83.73 | 82.35 |
| Dedicated time beyond common planning to collaborate or work with other teachers on instructional practice or strategies | 77.62 | 46.31 |
| Formal teacher leadership training | 68.89 | 47.88 |
| Mentorship by a more experienced teacher leader | 62.68 | 23.65 |
| Dedicated time beyond common planning to collaborate or work with other teacher leaders on supporting other staff | 58.16 | 40.68 |
| Formal teacher leadership roles with additional monetary compensation | 52.41 | 47.99 |
| Formal recognition as an exemplary teacher | 46.41 | 52.82 |
| Formal teacher leadership roles with change in job title | 32.17 | 30.76 |

Percentage Ranking the Support Among the Three Most Effective

**Figure 15. Q36: Top Three Barriers to Being Successful in Teacher Leader**

| Barrier | Percentage |
|---|---|
| Lack of time to collaborate or work with others on instructional practice or strategies for addressing performance or outcome gaps | 75.80 |
| Lack of compensation for additional responsibilities | 48.55 |
| Poor school climate or unsupportive school leaders | 40.27 |
| Lack of training or preparation for additional responsibilities | 30.47 |
| Lack of support, or even jealousy, from peers regarding my leadership role | 28.00 |
| State or district policies around licensure, release time, peer evaluation, or other policies that restrict teacher leadership activities | 27.79 |
| Other | 9.89 |

Percentage Ranking the Support Among the Three Most Effective

It is also interesting to note that formal training for teacher leadership roles was the third most important support, while training for cooperating teachers was not considered one of the top most important qualifications at the preservice stage. It may be that although preservice teachers do not see the teacher leaders they work with (i.e., cooperating teachers) as needing training, the teacher leaders serving in these roles themselves do believe that they benefit from specific training for their new responsibilities, such as training on adult learning.

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Compensation was not one of the most important supports, but it was the second most important barrier to being successful in a teacher leader role. Although compensation may not have directly impacted teacher leaders' ability to carry out their responsibilities, some evidence from existing teacher leadership initiatives suggests that inadequate compensation may prevent effective teachers from taking on teacher leadership roles. To better understand the types of compensation teacher leaders receive, we asked NBCTs what their additional pre-tax compensation was for their teacher leader roles (see Figure 16).

**Figure 16. Q35a: Additional Pre-Tax Compensation for Teacher Leadership Roles**

| Category | Value |
|---|---|
| $1,000 or under salary increase | 36.11 |
| $1,001 to 5,000 salary increase | 35.30 |
| $1,001 to 5,000 bonus or supplement | 9.74 |
| $5,001 to 10,000 salary increase | 6.85 |
| $5,001 to 10,000 bonus or supplement | 4.68 |
| $1,000 or under bonus or supplement | 3.70 |
| Over $10,000 bonus or supplement | 2.42 |
| Over $10,000 salary increase | 1.19 |

Percentage Ranking the Support Among the Three Most Effective

Nearly three-quarters of the NBCTs surveyed reported that they had minor salary increases for their teacher leadership role of up to $5,000 a year. Although additional compensation may not be a top support for teacher leaders (or even a major incentive for those seeking teacher leadership positions), receiving too little compensation for a more complex position with additional responsibilities may disincentivize effective teachers from taking on these roles.

## Policy or Program Considerations

Teacher leadership has become an important strategy for improving teacher recruitment, retention, and development; however, many schools and districts do not yet provide these opportunities. Policy leaders at the district and state levels should consider how best to strategically invest resources in teacher leadership considering the following approaches:

- **Provide training on distributed leadership.** Understanding the value of and best ways to support teacher leadership may come naturally to some principals, but others may benefit from training on how to effectively select, support, interact with, and release responsibility to teacher leaders. In addition, having multiple teacher leaders to whom to delegate may make the work of principals more sustainable and improve the recruitment and retention of school administrators as well.

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- **Establish "stepping stones" to teacher leadership.** Informal teacher leader roles may help principals to identify teachers who are well suited for a formal teacher leader role. Likewise, these informal roles can help teachers to explore positions of leadership and find the best fit.

- **Create career pathways for teachers.** Schools, districts, and states can also utilize teacher leader roles as a recruitment and retention strategy by making sure teacher leadership opportunities are clear to all current and prospective teachers from the start. Teachers may be more likely to take on teacher leadership roles (and maintain classroom teaching responsibilities) if there are clearly defined career paths into these roles. Establishing clear career paths in teaching may offer those teachers who seek additional compensation or advancement opportunities beyond moving into administrative roles. Teacher leader standards can help to support these roles by clarifying how teacher leaders use new and different skills in different types of roles.

  Schools and districts can also establish multiple types of teacher leader roles beyond serving as a mentor or evaluator. Some schools and districts have established teacher leader roles such as a novice teacher liaison, project-based learning support role, assessment support role, and collaborative interventionist. It may be beneficial to include some formal advancement structures, such as licensure or certification, for some teacher leader roles (such as those that include evaluating other teachers or making decisions concerning curriculum). It may also be beneficial for schools and districts to consider the ideal career trajectory of teachers, including requirements, responsibilities, and compensation that gradually increase over time as teachers take on more advanced leadership roles. Carefully designed teacher leader career pathways may ensure that effective teachers remain in the classroom and the teaching profession for longer periods of time, maximizing their impact on student learning and success. The resources included in Appendix A also provide more detailed guidance and research on building sustainable teacher leader pathways, especially the NNSTOY brief "Creating Sustainable Teacher Career Pathways: A 21st Century Imperative."

- **Explore innovative models for teacher leadership funding and structures.** To provide the noted supports and remove the barriers to teacher leadership, funding for training, for time for educator collaboration, and, in particular, compensation is needed. It is important for school, district, and state leaders to look for innovative models of teacher leadership that do not rely on temporary funding measures. One such model is Opportunity Culture, supported by Public Impact (a partner on the GTL Center). Opportunity Culture highlights a few different models of how teacher leadership can be cost-effective, relieve the principal of some instructional leadership responsibilities, and promote improved instruction over time. Using

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teacher leadership as a central strategy for instructional improvement may also help to streamline overall professional development spending and support teacher leadership activities. In addition, ESSA Title IIA funds, which are typically used for traditional professional development activities, may be repurposed to support professional learning led by teacher leaders.

## Conclusion

The findings across this study series do not stand alone; rather, this study series and other recent research have contributed to compelling evidence on how to make smart investments in teacher development and support over time. Many of the most important supports and experiences across the career continuum rely on interpersonal interactions: effective cooperating teachers, assigned and informal mentors, collaboration with peers, supportive school leaders, instructional leadership, and coaching all involve work with other educators focused on improving instruction. These experiences can be directly supported through policy at the state and local levels, but they also can be supported by teachers, principals, and others encouraging and creating conditions that enable these opportunities.

For leaders and policy makers, the time for action is now. It is time to invest in what works, focusing professional learning funds and strategies on interpersonal, collaborative professional learning. But it is also time to broaden the conversation around teacher voice in professional learning and policy. While this study series shines a light on the perspectives of STOYs and NBCTs, there are many additional teachers whose voices and ideas have not yet been brought to the forefront. Engaging teachers in this conversation at the school, district, and state level can empower great teachers to weigh in on what works in their local contexts, creating more effective and cost-effective systems of professional learning.

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# Additional Resources

The following resources highlight teacher perspectives on the issues covered in this report. The resources were developed by organizations across the country with input from teachers, teacher leaders, and former teachers.

**AFT**

*Raising the Bar: Aligning and Elevating Teacher Preparation and the Teaching Profession*
http://www.aft.org/sites/default/files/news/raisingthebar2013.pdf

**Educators for Excellence**

*Preparing for the Classroom: A Vision for Teacher Training in the 21st Century*
http://www.scribd.com/doc/148818377/Preparing-for-the-Classroom-A-Vision-for-Teacher-Training-in-the-21st-Century

*Investing in Our Future: Honoring Teachers' Voices in Professional Development*
http://educators4excellence.s3.amazonaws.com/8/04/6/2752/E4E_ILInvestingFuture_Web.pdf

**Center on Education Policy**

*Listen to Us: Teacher Views and Voices*
https://www.cep-dc.org/displayDocument.cfm?DocumentID=1456

**Center for Strengthening the Teaching Profession**

*Teacher Leadership Skills Framework*
http://cstp-wa.org/teacher-leadership/teacher-leadership-skills-framework/

**GTL Center**

*Teacher Leadership: Teacher Self-Assessment Tool*
http://www.gtlcenter.org/sites/default/files/TeacherLeadership_TeacherSelf-Assessment.pdf

*Teacher Leadership: School and District Readiness Tool*
http://www.gtlcenter.org/sites/default/files/TeacherLeadership_LeaderReadinessTool.pdf

*Policy Snapshot: Increasing Teacher Leadership*
http://www.gtlcenter.org/sites/default/files/Snapshot_Teacher_Leadership.PDF

**Hope Street Group**

*On Deck: Preparing the Next Generation of Teachers*
http://hopestreetgroup.org/teacherprep/

**Leading Educators**

*Leading from the Front of the Classroom: A Roadmap to Teacher Leadership that Works*
http://www.aspendrl.org/portal/browse/DocumentDetail?documentId=2402&download

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*Teacher Leader Competency Framework*
http://www.leadingeducators.org/publications/

*Building Bridges: Connecting Teacher Leadership and Student Success*
http://www.leadingeducators.org/publications/

## NBPTS

*What Teachers Should Know and Be Able to Do*
http://www.nbpts.org/sites/default/files/what_teachers_should_know.pdf

*National Board Standards*
http://www.nbpts.org/national-board-standards

*Residency: Can it Transform Teaching the Way it Did Medicine?*
http://www.nbpts.org/sites/default/files/Policy/ron_thorpe_pdk.pdf

## NNSTOY

Bosso, D. R. (2014). *"This is what I am:" Teacher motivation, morale, and professional identity in the context of educational reform* (Doctoral dissertation). Retrieved from http://gradworks.umi.com/36/47/3647754.html

## Teach Plus

*We're In This Together: How Schools, Districts, and Preparation Programs Must Collaborate to Prepare New Teachers*
http://www.teachplus.org/news-events/publications/were-together-how-schools-districts-and-preparation-programs-must

*Ready for Day One: Teachers Weigh in on Teacher Preparation*
http://www.teachplus.org/news-events/publications/ready-day-one-teachers-weigh-teacher-preparation

*Great Teachers Are Made: Teacher Views on the Need for Teacher Preparation Reform*
http://www.teachplus.org/news-events/publications/great-teachers-are-made-teacher-views-need-teacher-preparation-reform

*Teacher-Led and Student-Centered: Professional Learning that Makes a Difference*
http://www.teachplus.org/news-events/publications/teacher-led-and-student-centered-professional-learning-makes-difference

*Teachers Teaching Teachers: Transforming Professional Development by Empowering and Investing in Educators*
http://www.teachplus.org/news-events/publications/teachers-teaching-teachers

*Teacher Recommendations for Ensuring High-Quality Induction for New Teachers*
http://www.teachplus.org/news-events/publications/teacher-recommendations-ensuring-high-quality-induction-new-teachers

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**VIVA Teachers**

*Time, Teachers and Tomorrow's Schools*
http://vivateachers.org/wp-content/uploads/2013/11/VIVAChicago.pdf

*Teacher Voices for Education Reform: Making the Most of Time in School*
http://vivateachers.org/wp-content/uploads/2014/02/VIVANEA_TIS_IE_Final_WEB.pdf

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# Appendix A. Technical Research Methodology

## Study Participants

In October 2016, the National Board for Professional Teaching Standards (NBPTS) provided AIR with a database that included the names and e-mail addresses of all National Board Certified Teachers from all 50 states, the District of Columbia, and three territories (Guam, Puerto Rico, and the Virgin Islands) as well as armed forces stationed in Europe, the Pacific, and the Americas. The database included a total of 112,286 teachers who had been certified by NBPTS and entered their own information into the database.

In preparing the database for the survey administration, records were deleted for the following reasons: 126 records because of duplicate e-mail addresses and/or candidate numbers; 7,834 records because they did not have an e-mail address; and 18,933 records because they were marked by NBPTS either as undeliverable or the person had opted-out of any communication. After these deletions, 85,393 records remained. No sampling was performed. The invitation to participate in the survey was sent to the 85,393 participants.

## Data Collection

Staff at American Institutes for Research (AIR) administered the web survey on behalf of the NBPTS and the Center on Great Teachers and Leaders. NBPTS sent the prenotice about the survey to the NBCTs in the cleaned database on September 30, 2016. Data collection began on October 14, 2016 when AIR sent the 85,393 participants an e-mail invitation requesting their participation. Each participant was provided with a respondent-specific link to the online survey. The Good to Great Survey questionnaire is included in the resources accompanying this report on the GTL website (www.gtlcenter.com/goodtogreat). One week later, on October 21, 2016, survey participants received a reminder e-mail. Additionally, three follow-up e-mails to nonrespondents were sent on the following dates: October 27th, November 3rd, and November 10th. All the correspondence with the survey participants was conducted via e-mail. Data collection ended on November 15, 2016. The questionnaire and e-mails were written in English.

## Case Disposition, Response Rates, and Data Review

Of the 85,393 individuals who were invited to participate in the survey, 9,231 began answering the survey. Of these participants, 549 indicated on the opening screen of the web instrument that they did not consent to participate in the survey. A further 307 were ineligible to participate because they had either left the field of education, were retired, on sabbatical, or on extended leave. Additionally, 2,669 of the 85,393 e-mails that were sent were undeliverable.

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A survey was considered complete if the respondent met eligibility criteria, consented to survey participation, and reached the beginning of the Career Stage section of the survey.[7] In total, 5,796 participants completed the survey.

The data were reviewed for possible invalid values, skip pattern violations, and other data anomalies, but missing data were not imputed. No weights were created.

## Nonresponse Bias Analysis

A low response rate by itself is not indicative of nonresponse bias. The amount of nonresponse bias in a particular estimate is a function of the response rate and of differences between respondents and nonrespondents in the characteristic measured by the estimate. Specifically, nonresponse bias is equal to the product of the proportion of sampled cases that did not respond and the difference between the mean among respondents and the mean among nonrespondents:

$$Bias(Y_r) = Y_R - Y_P = \left(1 - \frac{R}{P}\right)(Y_R - Y_N)$$

where:

- $Y_R$ is the mean among respondents
- $Y_P$ is the true population mean
- $R$ is the number of respondents
- $P$ is the size of the population of interest
- $Y_N$ is the mean among nonrespondents

For example, even though only a small proportion of eligible teachers completed the survey, the estimated proportion of teachers who indicated that they had access to an assigned mentor would be biased only if the teachers who did not respond were more or less likely to have that characteristic than teachers who did respond.

Estimates of characteristics that are measured only by the survey instrument are, by definition, unavailable for nonrespondents. Therefore, for substantive survey estimates,[8] $Y_R$ in the above equation is known, but $Y_N$ and $Y_P$ are unknown. This implies that, absent a follow-up study of nonrespondents, bias in substantive survey estimates cannot be calculated directly. Rather, the risk of nonresponse bias must be inferred from the extent to which respondents differ from nonrespondents on characteristics that are known for both.

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[7] In other words, respondents who answered up to item 24 were considered to be "complete" responses.

[8] Throughout this Appendix, the term "substantive survey estimates" refers to characteristics that are measured only by the Good to Great survey instrument and cannot be obtained from either sources (e.g., administrative records).

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## Bivariate Analysis

The bivariate analysis compares the characteristics of teachers who responded to the survey to the characteristics of the universe of eligible teachers. This analysis uses the following variables available from the frame file:

- An indicator for whether the teacher had an available phone number;
- The field of the teacher's certificate;
- The teacher's age[9];
- The teacher's gender;
- The highest degree attained by the teacher;
- The Census region in which the teacher is located;
- Whether the teacher's school is eligible for Title I;
- The teacher's union affiliation, if known; and
- The teacher's years of experience.

Differences between the percentage distribution among respondents and the percentage distribution among all eligible teachers reflect the extent to which different types of teachers were more or less likely than average to respond to the survey. Such differences may indicate a risk of nonresponse bias in substantive survey estimates that are correlated with these administrative variables.

For each variable, a chi-square test for independence is used to test the statistical significance of differences between the distribution among respondents and the distribution among nonrespondents. This test gives the likelihood that the observed differences would occur by chance if the respondents were, in effect, a random sample of the eligible universe. However, given the large number of cases used in the analysis, even relatively small differences are likely to be statistically significant. For this reason, the practical significance of the observed differences should be taken into consideration. The ensuing discussion treats a difference of more than 1 percentage point between the respondents-only proportion and the universe proportion as a "substantively meaningful" level of bias in that proportion.

Table 1 shows the percentage distribution of each variable among the full group of NBCTs who received the survey invitation and among the 5,796 respondents. For each proportion, the estimated bias and the percent relative bias (PRB) are also shown. The estimated bias is equal to the respondents-only proportion minus the universe proportion. The PRB is equal to the estimated bias divided by the proportion among respondents only; because it is independent of the distribution of each particular variable, it serves as a standardized

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[9]  CERTIFIED_AGE was used as the age variable for this analysis.

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bias metric that can be compared across all estimates included in the analysis. If, for a particular proportion, the estimated bias and PRB are positive, it suggests that teachers with that characteristic are overrepresented among respondents relative to their share of the teacher universe. Conversely, if the estimated bias and PRB are negative, it suggests that teachers with that characteristic are underrepresented among respondents relative to their share of the teacher universe.

**Table 1. Percentage Distribution of Key Teacher Characteristics from Good to Great Frame, and *p*-Value From Chi-Square Test for Independence: Universe vs. Respondents**

| Characteristic | Percent | | Estimated bias | Percent relative bias[1] | *p*-value[2] |
| --- | --- | --- | --- | --- | --- |
| | Universe | Respondents | | | |
| **Phone number available** | | | | | |
| No | 7.3 | 6.4 | -0.9 | -13.6 | 0.02* |
| Yes | 92.7 | 93.6 | 0.9 | 0.9 | |
| **Certificate field** | | | | | |
| Art | 2.5 | 2.2 | -0.3 | -14.1 | 0.00** |
| Career/technical | 4.0 | 3.8 | -0.2 | -4.9 | |
| Counseling | 2.4 | 2.2 | -0.2 | -7.6 | |
| English language | 12.0 | 12.5 | 0.5 | 4.3 | |
| English as a new language | 1.5 | 2.0 | 0.5 | 24.8 | |
| Exceptional needs specialist | 8.0 | 8.6 | 0.5 | 6.1 | |
| Generalist | 32.0 | 26.1 | -5.9 | -22.7 | |
| Health | 0.1 | 0.1 | 0.0 | 28.3 | |
| Languages | 1.7 | 2.2 | 0.5 | 21.0 | |
| Library | 2.7 | 2.8 | 0.1 | 3.6 | |
| Literacy | 8.5 | 10.5 | 2.0 | 18.9 | |
| Math | 7.7 | 8.6 | 0.9 | 10.2 | |
| Music | 2.5 | 2.8 | 0.4 | 12.9 | |
| Physical education | 1.8 | 1.3 | -0.5 | -41.6 | |
| Science | 7.2 | 8.8 | 1.5 | 17.7 | |
| Social sciences | 5.3 | 5.5 | 0.2 | 3.8 | |
| **Age category** | | | | | |
| Less than 26 | 0.1 | 0.1 | 0.0 | -1.0 | 0.00** |
| 26 to 35 | 35.7 | 31.2 | -4.5 | -14.4 | |
| 36 to 45 | 31.3 | 38.3 | 7.0 | 18.3 | |
| 46 to 55 | 26.9 | 25.8 | -1.1 | -4.4 | |
| 56 to 65 | 5.9 | 4.6 | -1.3 | -29.1 | |
| Over 65 | 0.1 | 0.1 | -0.1 | -100.5 | |
| Missing | 0.0 | 0.0 | 0.0 | 0.0 | |

See notes at end of table.

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| Characteristic | Percent | | Estimated bias | Percent relative bias[1] | p-value[2] |
|---|---|---|---|---|---|
| | Universe | Respondents | | | |
| **Gender** | | | | | |
| Female | 87.3 | 88.4 | 1.0 | 1.2 | 0.00** |
| Male | 12.1 | 10.8 | -1.3 | -12.3 | |
| Missing | 0.5 | 0.8 | 0.3 | 35.5 | |
| **Highest degree** | | | | | |
| Associate's | 0.1 | 0.0 | -0.1 | 0.0 | 0.00** |
| Bachelor's | 31.0 | 24.9 | -6.0 | -24.2 | |
| Doctor's | 1.8 | 2.6 | 0.8 | 32.5 | |
| Master's or Juris Doctor | 64.2 | 69.8 | 5.6 | 8.1 | |
| No degree | 2.1 | 1.0 | -1.1 | -114.2 | |
| Post-Master's certificate | 1.0 | 1.7 | 0.7 | 41.1 | |
| **Census region** | | | | | |
| Northeast | 4.6 | 5.3 | 0.7 | 12.6 | 0.00** |
| South | 64.1 | 58.0 | -6.1 | -10.5 | |
| Midwest | 12.4 | 10.5 | -1.8 | -17.5 | |
| West | 18.8 | 26.1 | 7.3 | 28.0 | |
| Other[3] | 0.0 | 0.1 | 0.0 | 36.7 | |
| Missing | 0.1 | 0.0 | -0.1 | -151.0 | |
| **Title I school status** | | | | | |
| Not a Title I school | 32.3 | 34.0 | 1.7 | 4.9 | 0.00** |
| Title I status unknown | 31.9 | 28.6 | -3.3 | -11.6 | |
| Title I school | 35.8 | 37.5 | 1.7 | 4.4 | |
| **Union affiliation** | | | | | |
| AFT | 4.7 | 4.8 | 0.1 | 2.7 | 0.00** |
| NEA | 23.9 | 30.2 | 6.3 | 21.0 | |
| NEA-AFT | 2.3 | 3.1 | 0.7 | 23.4 | |
| Other | 1.7 | 1.6 | -0.1 | -9.0 | |
| Unknown | 67.4 | 60.3 | -7.0 | -11.7 | |
| **Years of teaching experience** | | | | | |
| Under 10 | 10.8 | 10.8 | -0.1 | -0.7 | 0.00** |
| 10 to 19 | 42.8 | 46.9 | 4.1 | 8.6 | |
| 20 to 29 | 28.4 | 30.4 | 2.0 | 6.7 | |
| 30 or higher | 17.9 | 11.9 | -6.0 | -50.4 | |

* p < .05
** p < .01
[1] The percent relative bias is the estimated bias divided by the respondent proportion. PRB were calculated using unrounded numbers and therefore may not exactly match calculations using the rounded numbers that are in the table.
[2] The p-value is based on a chi-square test of independence between the respondent percentage distribution and the nonrespondent percentage distribution (not shown in table). It represents the probability of obtaining the observed differences if respondents were a random subsample of the eligible universe.
[3] "Other" includes armed forces postal codes and U.S. territories.
NOTE: All percentages are unweighted and exclude teachers known to be ineligible for the survey.

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For all variables, the chi-square test indicates a strongly statistically significant difference in the percentage distribution, providing evidence that respondents differ from nonrespondents. The following variables show the largest biases in one or more categories:

- **Field of certificate:** teachers with "generalist" certificates are underrepresented by approximately 5.5 percentage points.

- **Age:** teachers who are 36 to 45 years old are overrepresented by approximately 6.6 percentage points, while teachers in the "26 to 35", "46 to 55", and "56 to 65" categories are underrepresented by 1.5 to 3.5 percentage points.

- **Gender:** male teachers are underrepresented by approximately 1.5 percentage points.

- **Highest degree completed:** teachers with a Master's degree or Juris Doctor are overrepresented by approximately 5.3 percentage points, while those with a Bachelor's degree are underrepresented by approximately 5.9 percentage points.

- **Census region:** teachers from the South are underrepresented by approximately 5.5 percentage points, while teachers from the West are overrepresented by approximately 6.9 percentage points.

- **Title I eligibility:** teachers at schools whose Title I status is unknown are underrepresented by approximately 3.0 percentage points.

- **Union affiliation:** teachers affiliated with the National Education Association (NEA) are overrepresented by approximately 6.2 percentage points, while those whose union affiliation is unknown are underrepresented by approximately 6.9 percentage points.

- **Years of experience:** teachers who have been teaching for 30 or more years are underrepresented by approximately 6.3 percentage points, while those who have been teaching from 10 to 29 years are correspondingly overrepresented.

This result suggests that there is some risk of nonresponse bias in estimates that are expected to be associated with the above characteristics.

A limitation of the bivariate analysis is that some of the characteristics shown in Table 1 are likely to be correlated with each other. For example, the age variable is likely to be correlated with the number of years of teaching experience. Therefore, it is uncertain whether observed biases in both variables reflect independent effects on response likelihood or are primarily driven by only one of the variables. A multivariate regression analysis can help to elucidate the independent effect of each variable on response likelihood.

## Multivariate Analysis

A logistic regression was estimated on the eligible universe with response status (1 = respondent, 0 = nonrespondent) as the dependent variable and the same variables used in the bivariate analysis as the independent variables. Table 2 shows the estimated

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coefficients from the regression, expressed as odds ratios. Because all of the independent variables are categorical variables, the interpretation of the odds ratios is as follows: The odds ratio on a particular category is equal to the odds of response[10] among teachers in that category, divided by the odds of response among teachers in the reference category for the variable, with all other variables held constant. An odds ratio above 1 implies that teachers with that characteristic are more likely to respond than teachers in the reference category, while an odds ratio below 1 implies that teachers with that characteristic are less likely to respond than teachers in the reference category. For example, considering the gender variable, the odds ratio of 0.7 on the "male" category implies that, all other factors held constant, male teachers were less likely to respond than female teachers (the reference category for gender).

**Table 2. Odds Ratios From Logistic Regression of Good to Great Response Status on Key Teacher Characteristics**

| Characteristic | Odds ratio | Standard error | z statistic[1] |
|---|---|---|---|
| **Phone number available** | | | |
| No | † | † | † |
| Yes | 1.2 | 0.07 | 3.5* |
| **Certificate field** | | | |
| Art | 1.1 | 0.11 | 1.0 |
| Career/technical | 1.2 | 0.10 | 2.4 |
| Counseling | 1.0 | 0.10 | 0.1* |
| English language | 1.3 | 0.06 | 4.9 * |
| English as a new language | 1.4 | 0.15 | 3.1 * |
| Exceptional needs specialist | 1.3 | 0.07 | 4.0 * |
| Generalist | † | † | † |
| Health | 1.4 | 0.55 | 0.8 |
| Languages | 1.5 | 0.16 | 4.1 * |
| Library | 1.2 | 0.11 | 2.0 * |
| Literacy | 1.3 | 0.07 | 5.5 * |
| Math | 1.4 | 0.08 | 5.7 * |
| Music | 1.5 | 0.14 | 4.6 * |
| Physical education | 0.9 | 0.11 | -0.9 |
| Science | 1.5 | 0.09 | 6.7 * |
| Social sciences | 1.3 | 0.09 | 4.1 * |

See notes at end of table.

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[10] The "odds" of response are equal to the proportion of teachers that responded divided by the proportion of teachers that did not respond. For example, in a category with a response rate of 60 percent, the odds of response are equal to 1.5 (60% divided by 40%). A more detailed explanation of the interpretation of odds ratios can be found at http://www.ats.ucla.edu/stat/mult_pkg/faq/general/odds_ratio.htm.

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| Characteristic | Odds ratio | Standard error | z statistic[1] |
|---|---|---|---|
| **Age category** | | | |
| Less than 36 or missing | † | † | † |
| 36 to 45 | 1.4 | 0.05 | 9.8 * |
| 46 to 55 | 1.3 | 0.06 | 5.3 * |
| 56 to 65 | 1.0 | 0.07 | -0.3 |
| Over 65 | 0.7 | 0.43 | -0.5 |
| **Gender** | | | |
| Female | † | † | † |
| Male | 0.7 | 0.04 | -5.9 * |
| Missing | 1.4 | 0.23 | 2.0 * |
| **Highest degree** | | | |
| Associate's or Bachelor's | † | † | † |
| Doctor's | 2.0 | 0.19 | 7.3 * |
| Master's or Juris Doctor | 1.4 | 0.05 | 8.8 * |
| No degree | 0.6 | 0.09 | -3.1 * |
| Post-Master's certificate | 2.2 | 0.26 | 6.8 * |
| **Census region** | | | |
| Northeast | † | † | † |
| South | 0.9 | 0.06 | -1.6 |
| Midwest | 0.8 | 0.06 | -3.5 * |
| West | 1.3 | 0.09 | 3.2 * |
| Other[2] | 1.6 | 0.98 | 0.8 |
| Missing | 0.5 | 0.33 | -1.1 |
| **Title I school status** | | | |
| Not a Title I school | † | † | † |
| Title I status unknown | 0.9 | 0.04 | -1.9 |
| Title I school | 1.0 | 0.04 | 0.6 |
| **Union affiliation** | | | |
| AFT | † | † | † |
| NEA | 1.1 | 0.08 | 1.7 |
| NEA-AFT | 1.2 | 0.13 | 1.5 |
| Other | 0.9 | 0.12 | -0.7 |
| Unknown | 0.9 | 0.06 | -1.7 |
| **Years of teaching experience** | | | |
| Under 10 | † | † | † |
| 10 to 19 | 1.1 | 0.06 | 2.2 * |
| 20 to 29 | 1.0 | 0.06 | 0.4 |
| 30 or higher | 0.6 | 0.04 | -6.9 * |

† Reference group for odds ratio.
* $p < .05$
[1] The z statistic is testing whether the odds ratio is significantly different from 1.
[2] "Other" includes armed forces postal codes and U.S. territories.
NOTE: Odds ratios are derived from an unweighted logistic regression of response status on the independent variables shown in the table. All independent variables are categorical.

See notes at end of table.

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The following variables had statistically significant odds ratios (at the 0.05 level or below) on one or more categories:

- **Phone availability flag:** Teachers for whom a phone number was available on the frame were significantly more likely to respond to the survey than those with no available phone number.

- **Field of certificate:** Teachers whose certificates were in many specialist fields (e.g., career/technical education, English as a new language, math, music, etc.) were significantly more likely to respond than those with generalist certificates.

- **Age:** Relative to teachers under the age of 36, teachers ages 36 to 55 were significantly more likely to respond.

- **Gender:** Male teachers were significantly less likely to respond than female teachers, while teachers whose gender was missing on the frame were significantly more likely to respond.

- **Highest degree completed:** Relative to teachers with an associate's or bachelor's degree, teachers with a graduate or professional degree were significantly more likely to respond while those with no degree were significantly less likely to respond.

- **Census region**: relative to teachers in the Northeast, teachers in the West were significantly more likely to respond while those in the Midwest were significantly less likely to respond.

- **Union affiliation:** relative to teachers affiliated with the AFT, teachers affiliated with the NEA-AFT are significantly more likely to respond.

- **Years of experience:** relative to teachers with less than 10 years of experience, teachers with 10 to 19 years of experience were significantly more likely to respond, while those with 30 or more years of experience were significantly less likely to respond.

The multivariate analysis confirms that most of the variables available in the frame file were significantly related to the likelihood of response. The exception is the Title I status of the teacher's school, which did not show a strong impact on response likelihood after controlling for other factors. The multivariate analysis confirms that most of the variables available in the frame file were significantly related to the likelihood of response. The exceptions are the Title I status of the teacher's school and the teacher's union affiliation, which did not show a strong impact on response likelihood after controlling for other factors.

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## Conclusion

These results suggest that there is some risk of nonresponse bias in the substantive survey estimates. This implies that estimates obtained using only the respondents to the survey are likely to differ from those that would be obtained if data had been collected from all teachers in the target population. In reports and other materials that cite estimates from the survey, readers should be cautioned that the estimates are calculated using only the respondents to the survey, whose characteristics are known to differ from those of the target population.

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