Planning Tool
to Provide Evidence of Progress
Toward Equitable Teacher Distribution

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ETS

This document is intended to assist states in thinking about how teacher
qualifications and characteristics can be used to distribute teachers in schools
and classrooms. It also provides guidance for states as they document progress
in the equitable distribution of highly qualified teachers.

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Contents

Introduction and Background

The Problem: Inequitable Distribution of Teachers

Many researchers have documented that the least qualified teachers are most likely to be found teaching high-poverty, low-achieving, minority students (Carroll, Reichardt, & Guarino, 2000; Darling-Hammond, 2002; Goe, 2002; Hanushek, Kain, & Rivkin, 2004; Ingersoll, 2002; Lankford, Loeb, & Wyckoff, 2001; Useem & Farley, 2004). These underqualified teachers are typically located in hard-to-staff schools where turnover is frequent and openings are often filled with inexperienced and uncredentialed teachers. States, districts, and schools have an obligation to work towards ensuring that all students—regardless of race, poverty, or geography—have access to highly qualified teachers. Moreover, states, districts, and schools have a responsibility to make concerted efforts towards reducing the concentration of underqualified teachers in high-poverty schools. States, districts, and schools must document both their efforts and the results of these efforts in order to demonstrate progress. This planning tool is directed specifically toward states. It will help states address the types of data that might be useful in demonstrating that they have made significant progress in this effort.

Requirements of the State Plan

From the state education agency (SEA) monitoring protocol for *Highly Qualified Teachers: Improving Teacher Quality State Grants* (U.S. Department of Education, 2005), which relates to the No Child Left Behind Act (Title I, Part A, Subpart 1, Section 1111[b][8][C]): Does the SEA also have a plan with specific steps to ensure that poor and minority children are not taught at higher rates than other children by inexperienced, unqualified and out-of-field teachers? Does the plan include measures to evaluate and publicly report the progress of such steps?

What Must Be Included in the State Plan

States will be at many different stages in the process of building data collection and analysis infrastructures. They also will have different contexts in which to collect data and varying restrictions on what types of data they can collect, based on state laws, district policies, and local bargaining agreements. They already will have systems in place for evaluating and reporting on their progress towards increasing the numbers of highly qualified teachers in their states, but they may lack mechanisms for tracking where such teachers are over time and correlating that information with classroom, school, and district demographics. For the short term, states should focus on documenting their *current* ability to collect and analyze appropriate data. For the longer term, states may consider other suggestions offered in this planning tool that may be useful in thinking about the future development of data collection and analysis efforts in the state.

Goals

States need to be able to provide evidence that they either currently have equitable teacher distribution or are making a good-faith effort toward moving in the direction of more equitable distribution at the level of the state, district, and individual schools within districts. This planning tool describes the types of data that may be useful in demonstrating improvement in the equitable distribution of teacher quality and qualifications. The purpose of the planning tool is to assist states as they (1) take stock of the types of data collection, analysis, and reporting procedures they currently have; and (2) consider the types of data they may want to collect in the future as well as determine future analysis and reporting procedures.

My state's goals for equitable teacher distribution:

For my state, the particular challenges we face in moving toward equitable teacher distribution are related to:

Highly Qualified Teachers

Many states are quickly moving toward 100 percent compliance in meeting the criteria that have been established for teachers to meet the definition of highly qualified. However, there are still many instances in which poor and minority children are taught at higher rates than other children by inexperienced, unqualified, and out-of-field teachers. Therefore, in order for states to continue assessing the quality and distribution of their teachers, the National Comprehensive Center for Teacher Quality (NCCTQ) proposes that states consider collecting and analyzing data on some additional teacher qualifications and characteristics that are associated with teaching quality. Thus, we will refer to the *current* definition of highly qualified teachers as well as to a *comprehensive* definition of highly qualified teachers that states may want to reflect on; the specifics of that definition are detailed below.

These criteria are being discussed so that states can consider the types of data they may want to collect now and in the future about teachers and the teaching contexts in which they work.

Definitions for Purposes of This Planning Tool

Highly Qualified: Current Definition

The current definition of *highly qualified* requires that teachers of core academic subjects meet the following criteria: (1) they have full state certification, (2) they hold at least a bachelor's degree, and (3) they have demonstrated subject-matter competency in each of the academic subjects they teach.

Highly Qualified: Comprehensive Definition

A more comprehensive definition of *highly qualified* includes all of the current highly qualified criteria—(1) full state certification, (2) at least a bachelor's degree, and (3) demonstrated subject-matter competency in each of the academic subjects they teach—and three more: (4) at least three years of classroom teaching experience as a teacher of record; (5) context-specific qualifications matched with teaching assignment; and (6) valid, reliable, and fair evidence on performance as a classroom teacher. These three additional criteria are described as follows:

- **Teaching Experience.** The number of years a teacher has taught as the teacher of record, including years while teaching in another state or country, but not including internships. Under this definition, a new teacher has 0 years of teaching experience, a teacher who is beginning a second year in the classroom has 1 year of teaching experience, and so on. For practical usage, it will be useful to divide teachers into two classifications: *novice* (0, 1, or 2 years of experience) and *experienced* (3 or more years of experience)[1]. Note that Education Secretary Margaret Spellings has emphasized the need to include teaching experience when considering teacher quality. Thus, for purposes of this planning tool,

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[1] The evidence on the relationship between teacher effectiveness and experience has been mixed. However, most studies do find a relationship between experience and student outcomes. That relationship seems to suggest teachers become increasingly more effective in their first three to five years of teaching, and then the benefits of additional experience appear to level out.

both the current definition of highly qualified and the added component of experience will be considered when discussing equitable teacher distribution.

- **Qualifications Matched to Context.** *Qualifications matched to context* are those qualifications that vary in importance, depending on the teaching assignment. To be considered a highly qualified teacher under this definition, the teacher's qualifications and characteristics are considered in terms of their match with the specific needs of the school. Thus, a teacher who is highly qualified for one school might not be highly qualified for another school.

  Schools and districts may have different priorities for what to consider under this category, depending on a number of local factors (e.g., urban or rural setting, ethnicity of student population, heritage language of most students). Examples of qualifications that might be matched to context include but are not limited to (1) teachers' second-language fluency in schools where that language is the heritage language of many or most of the students; (2) coursework or professional development designed to prepare teachers for specific situations, such as teaching in urban schools or in Native American communities; (3) coursework or professional development that has prepared teachers to work with students with disabilities, particularly in schools where such students are mainstreamed and/or where there are large numbers of students with disabilities; (4) quality of being a role model in mostly minority schools (e.g., a shared background—the teacher is from the community in which he or she is teaching and/or shares an ethnic or cultural background with the students he or she is teaching); and (5) contribution of diversity to mostly white schools.

- **Performance in the Classroom.** Regardless of "paper" qualifications, teachers vary widely in their effectiveness. As a way to examine teacher performance, many states and districts require classroom observations conducted at regular intervals by school or district administrators. Some states and districts also are experimenting with value-added measures[2], which rank individual teachers with other teachers in the district in terms of their students' achievement (controlling for such factors as students' previous achievement scores). Many states are using National Board for Professional Teaching Standards (NBPTS) Certification as an indicator of excellent classroom performance. Regardless of which measures are used, districts and states may want to quantify the data and connect it to teacher records (taking into account confidentiality considerations) in order to be able to determine the distribution of highly qualified teachers when using these types of measures.

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[2] With value-added measures, students' predicted achievement gains are compared with their actual gains. Thus, teachers are ranked on how much their students gained above or below what was predicted. Such measures have limitations and may be controversial. For a summary, see the National Association of State Boards of Education report *Evaluating Value-Added* at www.nasbe.org/recent_pubs/Value%20added%20exec%20summary.pdf.

For a more comprehensive definition of highly qualified, my state might want to focus on:

Highly Qualified Score

With the current definition of *highly qualified*, a teacher must meet three requirements to be deemed highly qualified. If additional requirements are added in subsequent years to establish that a teacher is highly qualified, a scoring system may be useful to establish how many of the criteria are being met. Rather than a dichotomous variable (highly qualified or not highly qualified), teachers would have a highly qualified score ranging from 1 to 6. All teachers can eventually achieve a score of 6. For novice teachers, it would be impossible to achieve a 6 until they attained "experienced" status, but all other qualifications suggested under the comprehensive definition are attainable through a combination of teacher effort (e.g., taking additional coursework), district resources (e.g., prioritizing and supporting professional development for certain topics), and incentives or policies that encourage teachers to seek (or retain) employment in schools where their particular array of qualifications and characteristics are particularly valuable to the school.

Note about the contribution of institutions of higher education to assisting states in documenting progress in the equitable teacher distribution: Institutions of higher education can contribute in several important ways. First, they can provide documents indicating specific coursework completed by teachers that may be used to establish qualifications matched to context. For example, when teachers graduate from their preparation program, the program can issue them a document listing coursework that the state has deemed appropriate for qualifications matched to context determination. Coursework related to preparing teachers to work with specific student populations such as Native Americans, English language learners, students with learning disabilities, and diverse student populations would be appropriate for inclusion on such a document. In addition, coursework related to preparing students to work in specific settings (such as urban or rural) or in specific communities (such as high-poverty communities) also would be appropriate. Further, college-sponsored professional development also could include certification of completion with specific qualifications matched to context category identified.

Institutions of higher education can help assist states in documenting qualifications matched to context in the comprehensive sense by:

Teacher Distribution

In specifying data and analyses, it will be helpful to have a shorthand term for the multipart idea of the distribution of teacher quality attributes. In this planning tool, then, the term *teacher distribution* refers to the distribution of teachers along the following dimensions: highly qualified status, experience, context-specific qualifications, and performance. It is likely that most states and districts do not currently collect data on all of these dimensions. However, states already may collect some of this data, and districts may consider collecting additional information (see Appendix C for an example of a spreadsheet with an indicator variable for experience, qualifications matched to context, and teacher performance).

Equitable Teacher Distribution

Teachers are distributed throughout the unit of analysis (state, district, or school) such that high-poverty, minority, learning-disabled students, or English language learners are just as likely to be taught by an experienced highly qualified teacher as are students who do not fall into those categories.

Indicators Useful for Calculating Equitable Teacher Distribution

Measuring State-Level Changes

For the state as a whole, the focus is on demonstrating that high-poverty students are increasingly more likely to be taught by an highly qualified teacher (measured year-to-year). State-level data should ideally provide the following:

1. The percentage of classes taught by highly qualified experienced teachers currently teaching in the state.

    ☐ Yes, SEA has these data.
      If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
      What steps would be required if the state decided to collect this information?
      _____

2. The percentage of classes taught by highly qualified experienced teachers currently teaching in high-poverty schools in the state.

    ☐ Yes, SEA has these data.
      If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
      What steps would be required if the state decided to collect this information?
      _____

3. The percentage of classes taught by highly qualified experienced teachers currently teaching in all other (not high-poverty) schools in the state.

    ☐ Yes, SEA has these data.
      If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
      What steps would be required if the state decided to collect this information?
      _____

4. As much historical data on these variables as is available within the state's data system to allow for an analysis of change over time.

    ☐ Yes, SEA has these data.
      If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
      What steps would be required if the state decided to collect this information?
      _____

Measuring District- and School-Level Changes

To document progress towards equitable teacher distribution, states will want districts to demonstrate that high-poverty students are increasingly more likely to be taught by a highly qualified experienced teacher for one of two reasons:

- There are proportionally more highly qualified experienced teachers in the district overall, increasing the likelihood of any given student having a highly qualified experienced teacher.

- Teachers have been redistributed (through transfer, possibly driven by incentives; or reassignment, possibly driven by policy changes) in a manner that increases the percentages of experienced highly qualified teachers in high-poverty schools.

District-level data should ideally provide the following:

1. The percentage of classes taught by highly qualified experienced teachers currently teaching in the district.

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

2. The percentage of classes taught by highly qualified experienced teachers currently teaching in high-poverty schools as a function of the total number of classes taught by highly qualified teachers in the district (e.g., "43 percent of the district's classes are taught by highly qualified teachers in high-poverty schools").

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

3. The out-of-field teaching rate by percentage of classes taught (i.e., the number of classes being taught by a teacher not certified in that subject as a percentage of the total number of classes taught by that teacher). For example, a high school teacher certified only in English who is teaching one mathematics class out of five assigned classes would be counted as 20 percent out-of-field teaching. These rates would be averaged across schools for the district rate. Information about subjects and grade levels most likely to be taught out-of-field should ideally also be collected.

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

4. The teacher turnover rate for the district (i.e., the number of vacant full-time equivalent slots to be filled each year, minus newly created slots), and information about the grade level and subject area for the vacancies.

☐ Yes, SEA has these data.
If yes, where are the data housed? _____

☐ No, SEA does not have these data.
What steps would be required if the state decided to collect this information?
_____

5. As much historical data on turnover variables as is available within the district's data system to allow for an analysis of change over time.

☐ Yes, SEA has these data.
If yes, where are the data housed? _____

☐ No, SEA does not have these data.
What steps would be required if the state decided to collect this information?
_____

School-level data should ideally provide the following:

1. The percentage of classes taught by highly qualified experienced teachers (certified and teaching in their field as measured by degree or test) currently teaching in the school.

☐ Yes, SEA has these data.
If yes, where are the data housed? _____

☐ No, SEA does not have these data.
What steps would be required if the state decided to collect this information?
_____

2. Percentages of classes taught by highly qualified experienced teachers in the school by (1) subject; (2) grade; (3) student characteristics (such as English language learners, special education, high poverty, and minority); and (4) advanced or remedial classes.

☐ Yes, SEA has these data.
If yes, where are the data housed? _____

☐ No, SEA does not have these data.
What steps would be required if the state decided to collect this information?
_____

3. The teacher turnover rate for the school (i.e., the number of vacant full-time equivalent slots to be filled each year, minus newly created slots), and information about the grade level and subject area for the vacancies.

☐ Yes, SEA has these data.
If yes, where are the data housed? _____

☐ No, SEA does not have these data.
What steps would be required if the state decided to collect this information?
_____

4. The out-of-field teaching rates by percentage of assigned classes (i.e., a high school teacher certified only in English who is teaching one math class out of five assigned classes would be counted as 20 percent out-of-field teaching). These would be averaged across teachers for the school rate. Information about subjects and grade levels most likely to be taught out-of-field should ideally also be collected.

☐ Yes, SEA has these data.
If yes, where are the data housed? _____

☐ No, SEA does not have these data.
What steps would be required if the state decided to collect this information?
_____

Of the "no" responses, my state will make the following indicators a priority in the long-term (could be "none"):

Other Indicators of Equitable Teacher Distribution

Unique Identifiers

In order to document efforts to distribute qualified teachers across all schools, each student and teacher needs to have a *statewide unique longitudinal identifier*. To comply with the requirements of the No Child Left Behind (NCLB) Act (2002), most states have already created mechanisms to generate statewide unique longitudinal identifiers for students, but fewer states have extended that policy to include teachers.

Statewide Unique Longitudinal Identifier

Most state and federal policy refers to a *unique statewide identifier*. However, the term *longitudinal* has been added in this case for a specific purpose: to clarify that this unique statewide identifier should follow the teacher for his or her entire teaching career within that state. This distinction is important because teachers often leave teaching for family obligations, to attend school full time, or to explore other career opportunities. Where state policy allows, a linked file of Social Security Numbers and statewide unique longitudinal identifiers[3] should be maintained for teachers so that if or when they return to teaching, their statewide unique longitudinal identifier will be connected to their new teaching assignment. Where it is not possible to link unique statewide identifiers to Social Security Numbers, the unique statewide identifiers can instead be linked to a set of variables that when used in combination would identify a unique teacher (such as name, date of birth, year first entered state data system as a teacher, and last school in which he or she taught.)

Having statewide unique longitudinal identifiers for both teachers and students will make it easier for schools, districts, and the state to examine trends in teacher and student transfer; identify schools with high teacher turnover; and develop better information on which subjects, grade levels, and students are most likely to be taught by highly qualified experienced teachers. This type of information will be useful in developing policies and incentives that will apply to these specific subjects, grades, schools, and students.

> *My state (does/does not) have a statewide unique longitudinal identifier for students and teachers. If not, are there plans to implement this? Please describe below:*

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[3] Because having a file linked to Social Security Numbers may raise privacy concerns, states should create policy language to indicate that the linked file will be used only for the specified purposes outlined above (and any other uses the state has previously approved).

Tracking Transfer Patterns

One important use of the teacher statewide unique longitudinal identifiers is to track teachers' transfers between schools and districts and analyze patterns. This tracking is crucial to develop data to support policies at the state and district level to address teacher transfers away from high-poverty, high-minority, and low-achieving schools.[4]

States that have sufficient data infrastructure to track transfer patterns include New York, North Carolina, Ohio, and Texas.

My state (does/does not) track transfer patterns. If not, are there plans to do so? Please describe below:

Current Distribution

Using the statewide unique longitudinal identifiers, each state ideally can report on the current prevalence and distribution of highly qualified experienced teachers among districts, and most important, among schools within districts. Teacher characteristics and qualifications to collect for this purpose include the following:

1. Years of teaching experience.

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

2. A variable to indicate that the teacher has met state and federal requirements for highly qualified in terms of certification.

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

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[4] A number of reports have documented that teachers tend to transfer or move out of these schools.

3. Initial hire date plus certification(s) at hire date (full, provisional, or waiver).

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

4. Date of change in certification(s) plus certification type(s).

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

5. For middle and high school teachers, evidence of subject-matter competency (indicate whether degree in subject area or passing score on subject-matter test).

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

6. Subject-matter certification.

    • Initial certification(s) plus subject(s)
    • Additional certification(s) plus subject(s)

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

7. Level and focus of education.

    • Initial degree plus date
    • Subsequent degree(s) plus date(s)
    • College major(s)
    • College minor(s) if any

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

8. Date of exit from teaching force (where applicable).

- Reason for exit (i.e., retirement versus all other reasons)
- Date of rehire (if any)

  ☐ Yes, SEA has these data.
  If yes, where are the data housed? _____

  ☐ No, SEA does not have these data.
  What steps would be required if the state decided to collect this information?
  _____

My state plans to make the following indicators a priority in the long-term (**could be "none"**)*:*

Optional Teacher Data

There are additional, optional teacher characteristics and qualifications that would allow states to answer more complex questions about teachers' qualifications and characteristics. However, the collection and use of these types of data may be subject to bargaining agreements and to state policy regarding collecting particular kinds of data. Optional teacher data might include the following:

1. Route into teaching (i.e., traditional or alternative)

   ☐ Yes, SEA has these data.
   If yes, where are the data housed? _____

   ☐ No, SEA does not have these data.
   What steps would be required if the state decided to collect this information?
   _____

2. Race/ethnicity—to examine the distribution of teacher race relative to student race and race of other teachers within the school or district.

   ☐ Yes, SEA has these data.
   If yes, where are the data housed? _____

   ☐ No, SEA does not have these data.
   What steps would be required if the state decided to collect this information?
   _____

3. Second-language proficiency—to examine the distribution of teacher language proficiency to student heritage language.

□ Yes, SEA has these data.
   If yes, where are the data housed? _____

□ No, SEA does not have these data.
   What steps would be required if the state decided to collect this information?
   _____

4. Teacher test scores (such as Praxis scores)—to examine the distribution of high- and low-scoring teachers among classrooms, schools, and districts.

□ Yes, SEA has these data.
   If yes, where are the data housed? _____

□ No, SEA does not have these data.
   What steps would be required if the state decided to collect this information?
   _____

5. National Board Certification status.

□ Yes, SEA has these data.
   If yes, where are the data housed? _____

□ No, SEA does not have these data.
   What steps would be required if the state decided to collect this information?
   _____

6. Participation in specialized coursework, field experiences, or professional development designed to better prepare teachers for the challenges of teaching in at-risk or hard-to-staff schools.

□ Yes, SEA has these data.
   If yes, where are the data housed? _____

□ No, SEA does not have these data.
   What steps would be required if the state decided to collect this information?
   _____

Among optional indicators, my state plans to make the following a priority in the long-term (could be "none"):

Context Variables

There also are context variables that districts and states may wish to examine in conjunction with teacher-level indicators to determine the following:

1. Whether teachers with second-language proficiency are teaching in schools and/or classrooms with high percentages of students who share that language.

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

2. Whether teachers with specialized training (in urban education, for example) are teaching in schools where that training is most likely to be benefit the students, teachers, and school as a whole.

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

3. Whether alternatively certified teachers are disproportionately teaching in high-poverty schools.

    ☐ Yes, SEA has these data.
    If yes, where are the data housed? _____

    ☐ No, SEA does not have these data.
    What steps would be required if the state decided to collect this information?
    _____

> *My state plans to make the following context indicators a priority in the long-term* **(could be "none"):**

Analysis of State Data on Equitable Teacher Distribution

Step 1. Linking Variable

A variable by which statewide unique longitudinal identifiers for teachers and students can be linked over time is useful for many purposes, including tracking the assignment of highly qualified teachers to classrooms within schools.[5] A linking variable can be a school roster (list of students in a particular classroom). The appropriate teacher is then linked to that roster, thus linking him or her to each of the students. While linking individual students to teachers is useful for some purposes, the classroom roster as linking variable is most useful because of the importance of class effects and peer effects. In other words, students are nested within classrooms, which are nested within schools, which are nested within districts. All students in a class are assumed to be exposed to the same conditions for learning, including the same teacher, peers, and classroom-level resources.

Step 2. Analysis

Once the current distribution of teacher qualifications and characteristics is documented, states can then analyze the data to determine whether schools with large percentages of high-poverty students have higher percentages of classes taught by teachers with significantly lower qualifications, particularly in terms of highly qualified status, experience, and out-of-field teaching assignments. This analysis may reveal several scenarios:

- The state as a whole has no significant differences in teacher distribution (i.e., classes taught by highly qualified experienced teachers are distributed about evenly among high-poverty and low-poverty schools).

- The state as a whole has significant differences in teacher distribution across all districts in the state (i.e., classes taught by highly qualified experienced teachers are not distributed evenly in every district).

- The state as a whole has significant differences in teacher distribution, but these differences are concentrated in a few districts (i.e., some districts have high percentages of classes taught by highly qualified teachers among both high- and low-poverty schools, while other districts have uneven distribution).

For the first scenario, the state would not have to address policy changes because none would be needed. For the second scenario, the state may want to consider statewide legislation or policy changes to support redistribution of teachers in every district. For the third scenario, states might consider state legislation or might allow individual districts to develop their own strategies for addressing the distribution of teachers, since the distribution problem occurs only in certain districts rather than throughout the state.

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[5] Not only are less qualified teachers likely to teach in high-poverty and high-minority schools, there is also evidence that less experienced teachers are more likely to be assigned to classrooms with larger percentages of minority and poor students within schools.

Demonstrating Improvement in Equitable Teacher Distribution

States may use several different measures and methods to demonstrate that they are making progress on equitable teacher distribution. Below are some alternatives, along with appropriate circumstances for which these alternatives might be recommended.

- **Statistical Methods (Spearman's Rank Correlation Coefficient).** This method is most useful for (1) a state in which there are many districts; or (2) a district in which there are many schools, with at least two at each level (e.g., two elementary schools and two secondary schools). Statistical software can generate the rankings based on the percentage of highly qualified teachers and the percentage of high-poverty students (or minority students or other groups). After schools are ranked, the Spearman's rank correlation coefficient compares pairs of data and indicates whether they are significantly different. The goal is to find that they are not significantly different. This test is useful when variables are not jointly normally distributed and/or when statistical outliers skew the data, influencing the calculation of the Pearson's product moment correlation coefficient. It is also useful because it indicates the direction of the relationship (which makes it superior to chi-square for this purpose).

- **Simple Graphs.** Where the district has only one school at a particular level, one method to show progress is to compare the school to itself rather than to other schools. One method would be a graph showing changes in the distribution of highly qualified teachers to high-poverty students over time.

- **Comparison of Districts.** Using logistic regression, districts can be compared to each other within the state. Regression holds constant such district characteristics as urban or rural, percentage of high-poverty students in the district, and other characteristics. The regression results can then be used to indicate which districts are doing better or worse than expected in terms of equitable teacher distribution, given their particular mix of characteristics.

- **Other.** States should be able to demonstrate that they are making a good-faith effort to improve the equitable teacher distribution. There may be other statistical and graphical means besides those indicated above that would permit states to provide evidence of progress in equitable teacher distribution.

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Appendix A

Information Relating to Levels of Data

Student-level data can be used to determine the relationship between specific student, teacher, and school characteristics. These data can be used to answer the following questions:

- Are low-achieving students more likely to be taught by less experienced teachers?

- What is the likelihood that a black high school student will be in a remedial class rather than an Advanced Placement class in this school or district?

- What is the likelihood that a high-poverty student will be in a classroom or school with mostly high-poverty peers?

Teacher-level data can be used to determine the relationship between teacher characteristics and qualifications within schools or districts. These data can be used to answer the following questions:

- How likely is a teacher to be the same race as the majority of teachers in the school if their race is white? If their race is black?

- How likely is a teacher to be a first- or second-year teacher in a high-poverty school versus a low-poverty school?

Classroom-level data can be used to determine how teachers are distributed among classrooms within schools. These data can be used to answer the following questions:

- Are less experienced teachers more likely to be assigned to classrooms if the average achievement for the class is below the rest of the school's classrooms?

- Are teachers with waivers more likely to be assigned to classrooms with more minority students or poor students than are teachers with full credentials?

School-level data can be used to determine how teachers are distributed across schools within districts, regions, or states. These data can be used to answer the following questions:

- What is the likelihood of a highly qualified teacher teaching in a low-performing school within a given district?

- Which schools within the district have the greatest need to improve their equitable teacher distribution?

District-level data can be used to determine how teachers are distributed among schools within the state by the following:

- Percentage of high-poverty students
- Percentage of students of different racial groups
- Percentage of students who are English language learners
- Percentage of students at various levels of proficiency in subjects such as reading, mathematics, science, language arts, social studies
- Special education students

Descriptions of Data

- **Classroom-level data** includes student and teacher data requiring unique longitudinal statewide identifiers and a mechanism to link students to teachers.

- **School-level data** includes aggregated data from classroom-level data or individual student data. Each school must have a unique identifier, and there must be a mechanism to link students and teachers to the school.

- **District-level data** includes student, teacher, and school data—all of which require unique identifiers.

Appendix B

Linking Teacher Distribution Data and Teacher Distribution Policies

States ideally should be able to provide information about the distribution of teachers in all districts and schools based on student demographic data, such as the percentage of high-poverty students and minority students; census designations (e.g., urban, suburban, rural); student achievement (e.g., whether highly qualified and/or experienced teachers are concentrated in high-performing versus low-performing schools or populations within schools). Preferably, states also would be able to provide documentation of the degree to which the current distribution does or does not disadvantage certain groups of students (e.g., whether high-poverty students are less likely to be taught by a highly qualified experienced teacher). If there is evidence that some groups of students are disadvantaged in terms of teacher quality or experience (within schools, within districts, or across districts), states should provide documentation in subsequent years that there has been improvement in the distribution patterns such that each year, the state, district, or school is moving closer to equitable teacher distribution.

From a policy perspective, states ideally should be able to provide information on strategies that the state and/or districts are employing to reassign or encourage voluntary transfers of teachers in order to achieve equitable teacher distribution across and within schools. It would also be helpful to provide documentation on the implementation and relative effectiveness of various incentives and strategies designed to encourage and facilitate teacher recruitment, reassignment, or transfers that will improve district and state teacher distribution. If possible, states also may identify and consider ways to address current policies and practices that may inadvertently work against equitable teacher distribution. A good example of such a policy with inadvertent consequences is reducing class size when teacher shortages exist. As schools scramble to fill newly created classes with qualified teachers, the most experienced teachers transfer to "preferred" schools, leaving harder-to-staff schools choosing from among the most inexperienced and least qualified applicants, thus exacerbating teacher distribution inequities.

State should have policies that will accomplish the following:

- Establish criteria for defining acceptable levels of improvement in distribution of highly qualified teachers and experienced teachers that are based on an improvement curve that approaches equity.

- Provide guidance to districts and schools for how to achieve acceptable levels of improvement in teacher distribution, including assistance in developing or implementing policies, funding incentives, and recruiting highly qualified and/or experienced teachers.

States should use the following strategies for increasing the percentage of highly qualified teachers:

- Increase the number of uncertified teachers who achieve certification by prioritizing teachers in high-poverty schools for incentives and assistance.

- Decrease the number of certified teachers who are teaching out-of-field, through reassignment; teacher sharing (one teacher who travels among two or more schools to teach the subject for which he or she is certified, thus eliminating the need to assign

uncertified teachers to those classes when additional full-time equivalents cannot be justified); and distance learning (a teacher certified in a subject provides the instruction through distance-learning technology).

- Increase retention rates for certified teachers, prioritizing teachers in high-poverty schools through school-based incentives such as smaller classes, additional planning period, additional professional development days, additional support staff, and improvements in school climate and working environment.

- Through mentoring and induction programs, increase retention rates for less experienced teachers so that they stay in their original schools, or at least in the profession, long enough to become effective.

Appendix C

Sample Chart for Evaluating Comprehensive Teacher Quality

Presented below is an example of a spreadsheet entry for evaluating comprehensive teacher quality for teachers in a mostly Latino, mostly Spanish-speaking, high-poverty urban school.

Teacher ID	Certif. Status	Year First Taught as Certified Teacher of Record	Novice? (1–3 Years as Teacher of Record) *(Dummy Variables)*	Subject Certif.	Teacher Race/ Ethnicity	Language Fluency (other than English)	Special Certif.	Special Coursework	Special Prof Dev.	Qualifications Matched to Context *(Dummy Variables)*	Teacher Performance *(District Rank Using Value-Added Score 1–3)**
211463	1	2005	1	Math	White	Spanish	ELL, BCLAD	ELL, Urban	None	1	2
210489	2	2005	1	Lang Arts	Hispanic	Spanish	ELL	ELL	Urban	1	1
319687	2	2001	0	Science	Asian	Chinese	None	ELL	None	1	2
134241	2	1994	0	Math	White	None	BCLAD	Special Ed	None	1	2
319443	2	2000	0	Social Studies	White	None	None	Reading Recovery	Urban	1	3

Explanation of Codes

Certification Status: 1 = Preliminary certification, 2 = Full certification.

Novice (Dummy Variables): 0 = Qualification or characteristic is not present; 1 = Qualification or characteristic is present.

Special Certification: ELL = English language learner; *BCLAD* = bilingual cross-cultural language in academic development.

Qualifications Matched to Context (Dummy Variables): 1 = Teacher has second-language fluency in schools where that language is the heritage language of many or most students.

Value-Added Score: 1 = Top 25 percent of district (in student achievement), 2 = Middle 50 percent of district, 3 = Lowest 25 percent of district. The goal would be to ensure that the bottom 25 percent of teachers in the district are not disproportionately found in the high-poverty, high-minority schools.

Complete Codes for Qualifications Matched to Content

1. Teacher has second-language fluency in schools where that language is the heritage language of many or most students.

2. Teacher has completed coursework or professional development designed to prepare teachers for specific situations, such as teaching in urban schools or in Native American communities.

3. Teacher has completed coursework or professional development that has prepared teacher to work with students with disabilities, particularly in schools where such students are mainstreamed and/or where there are large numbers of students with disabilities.

4. Teacher is qualified as a role model in mostly minority schools (i.e., a shared background—the teacher is from the community in which he or she is teaching and/or shares an ethnic or cultural background with the students he or she is teaching).

5. Teacher contributes diversity to mostly white schools.

Note that all of the teachers would be qualified in terms of qualifications matched to context through their language fluency (indicator 1), their certification, coursework, or professional development (indicators 2 and 3), and/or their ethnicity (indicator 4). None would be qualified on indicator 5, since they are not in a mostly white school. However, the first teacher would not be considered highly qualified under the current guidelines because of incomplete certification, and the first teacher as well as the second teacher would be considered novice teachers.