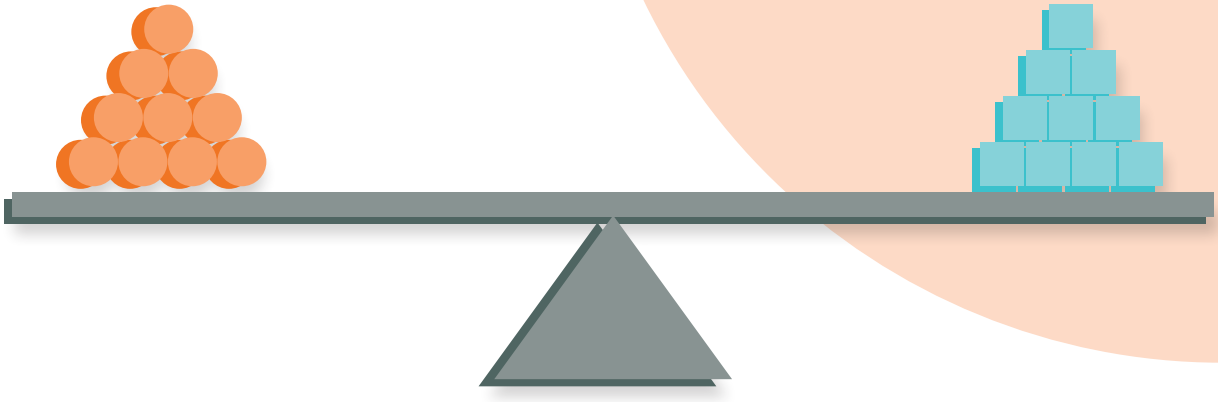

Equitable Access to Highly Effective Teachers for Tennessee Students

Division of Data and Research
Research and Strategy Team
March 2016

TN Department of Education

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CONTENTS

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EXECUTIVE SUMMARY

Decades of research have confirmed that teachers are the most important in-school factor for improving student achievement. Furthermore, studies find that access to effective teachers is most critical for students who struggle academically.[1] Data from Tennessee shows that, on average, students who score at the lowest proficiency level see the largest gains after having a highly effective teacher for two or more consecutive years.

Yet, low-performing students are less likely than their higher-performing peers to have access to the best teachers. For example, in the 2014–15 school year, in grades 4–8 math, only 45 percent of the lowest performing students had a highly effective teacher while 55 percent of advanced students had a highly effective teacher. To improve student achievement for all students, we must work toward ensuring that all students have access to effective teachers and that our lowest-performing students are not systemically assigned to lower-performing teachers.

With this goal in mind, this report describes the current landscape of Tennessee students' access to highly effective teachers by examining both the supply and distribution of highly effective teachers at the state, district, and school levels. We hope that this report will support districts and schools in examining their teaching data and their teacher-student matching practices to ensure equitable access to highly effective teachers for Tennessee students.

Key Findings

- Students scoring at the lowest proficiency level (below basic) were less likely than students scoring at the highest level (advanced) to have access to highly effective teachers in both math and English language arts (ELA), with larger gaps in math.
- Across the state, we had a limited supply of highly effective teachers in grades 4–8 ELA, with the average district having only 24 percent of their teaching force considered highly effective.
- Some districts had very large gaps between advanced students' access to highly effective teachers versus below basic students' access to highly effective teachers—signifying that highly effective teachers were concentrated in select schools in the district. Other districts had very small or zero gaps, signifying a greater balance of highly effective teachers across schools in the district.
- We also found great variation in regards to advanced versus below basic students' access to highly effective teachers when we examined gaps at the school level. Some schools had very large gaps—signifying that within these schools, students at the highest achievement level had greater access to highly effective teachers. Other schools had negative gaps indicating that, when a gap existed, below basic students had greater access to highly effective teachers than did advanced students.

This report was written by Lacey Hartigan with support from Mary Batiwalla, Laura Booker, Sylvia Flowers, Jonathon Attridge, Lila Goldstein, Nate Schwartz, and Zac Stone. This report was designed by Brad Walker.

INTRODUCTION

Access to effective teachers is critical for all students and especially important for those students who are furthest behind academically.[2] Unfortunately, it is often the case that these are the students who are systematically less likely to be placed in highly effective teachers' classrooms. This report examines which Tennessee students have access to the highest performing teachers and whether this access is equitable across the state, districts, and schools.[3] It is organized around five questions:

1. Do Tennessee students have equitable access to highly effective teachers?
2. What factors affect students' access to highly effective teachers?
3. What is the current supply of highly effective teachers in Tennessee?
4. How are highly effective teachers distributed within districts and schools in Tennessee?
5. What are we doing and what can we do to improve students' access to highly effective teachers?

Defining "Highly Effective"

To analyze student access to highly effective teachers, we used data from Tennessee's teacher evaluation system to define "highly effective." Specially, we use a teacher's subject/grade-level growth score. This student growth score is from the Tennessee Value-Added Assessment System (TVAAS) and measures the impact a teacher has on his/her students' academic progress. This TVAAS measure indicates a teacher's contribution to his/her students' learning during the school year rather than solely considering student scores on the end of year assessment without regard for students' starting points.

For each school year, and for each subject-grade combination taught, a teacher receives a TVAAS score ranging from 1 to 5. A level 1 or 2 signifies that the teacher's students made below expected growth in that subject-grade, a level 3 signifies that the teacher's students made expected growth, and a level 4 or 5 indicates that a teacher's students exceeded expected growth.

For the purposes of this analysis, we define a "highly effective" teacher as one who scored a TVAAS level 4 or 5 in the previous year. This level 4 or 5 indicates that the teacher's students showed growth in their academic achievement beyond what they were expected to show over the course of the school year.

What we mean when we say...

Access: Whether or not a student has the opportunity to be paired with a highly effective teacher.

Between-school: Differences/similarities that may exist across the schools in a district. These comparisons examine a district's School A in relation to School B.

Distribution: Which students/teachers are in a given school or district.

Highly effective (HE) teachers: Teachers who had a TVAAS level 4 or 5 in the previous school year.

Supply: The pool of currently available teachers in the state, district, or school.

Within-school: Differences/similarities that may exist within an individual school. These comparisons examine practices within School A in relation to other practices within this same School A.

Proficiency levels: The four levels of achievement based on students' scores on Tennessee State exams. From lowest to highest these levels are: below basic, basic, proficient, and advanced. If a student achieves a level of proficient or advanced, s/he performed at or above grade level.

THE IMPORTANCE OF EQUITABLE ACCESS TO HIGHLY EFFECTIVE TEACHERS

Students' academic achievement over time can be linked to the quality of their classroom teachers. As seen in Figure 1, students who scored below basic–the lowest achievement level–on state math assessments in 2013 made greater achievement gains at the end of 2015 if they had access to a highly effective math teacher for two years. All students included in the graph were below basic in 2013. The left bar shows performance levels in 2015 for students who did not have access to a highly effective teacher in the 2013–14 or 2014–15 school years. In comparison, the right bar shows 2015 performance levels for the group of below basic students who had access to a highly effective teacher in both the 2013–14 and 2014–15 school years. As the figure shows, the group that had highly effective teachers for both years was much more likely to score at a higher achievement level at the end of 2015–just one-third of students who did not have a highly effective teacher in either year moved up compared to about two-thirds of the students who had a highly effective teacher for both years.

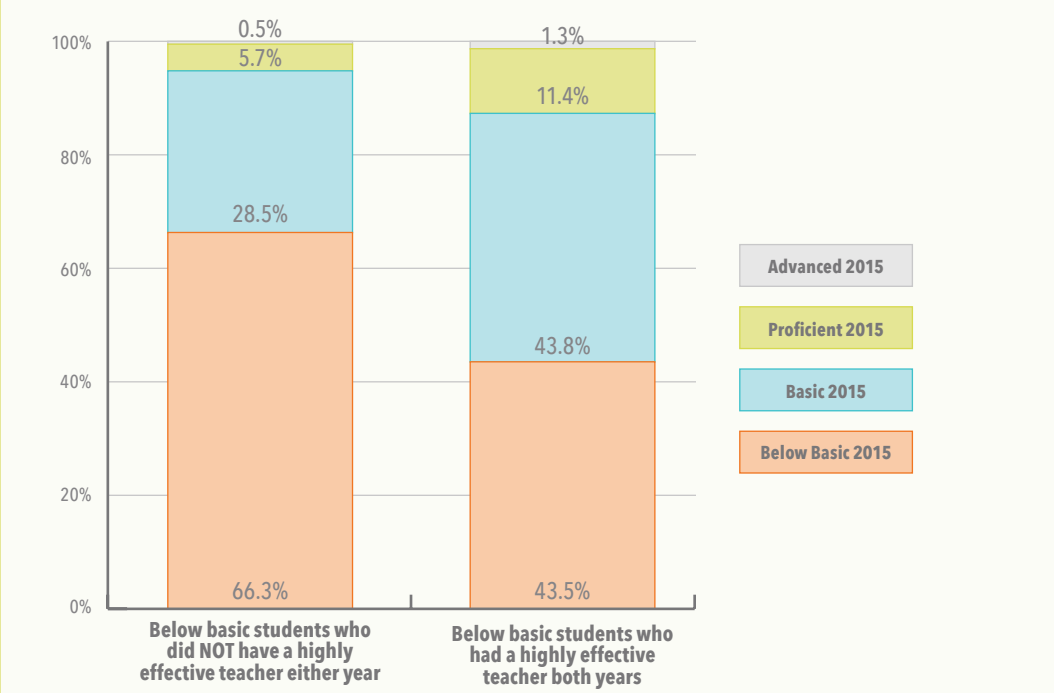


Figure 1. Changes in proficiency level for grades 4–8 students who scored below basic on math in 2013: Students had either two years without a highly effective teacher (left bar) or two years with a highly effective teacher (right bar).

In addition to the data presented in Figure 1, we also examined how students at each of the other proficiency levels fared after two years with or without a highly effective teacher. In doing so, we found that, indeed, all students benefited from two years with a highly effective teacher, showing greater achievement gains than their peers who did not have a highly effective teacher in either year. However, looking across these comparisons, we saw the biggest difference in achievement gains in the below basic group.

Just one-third of students who did not have a highly effective teacher in either year moved up compared to about two-thirds of the students who had a highly effective teacher for both years.

DO TENNESSEE STUDENTS HAVE EQUITABLE ACCESS TO HIGHLY EFFECTIVE TEACHERS?

While Tennessee data show that lower-performing students benefit greatly from access to highly effective teachers, we found that these students were less likely to have these teachers, particularly in math. As Figures 2 and 3 demonstrate, we found a clear gap between advanced and below basic students' access to highly effective teachers in grades 4–8 and high school math. Examining the figures, we see that approximately 55 percent of advanced students in grades 4–8 math had a highly effective teacher as compared to 45 percent of below basic students. This means that five out of ten advanced students had a highly effective math teacher in grades 4–8, while only four out of ten below basic students had a highly effective teacher.

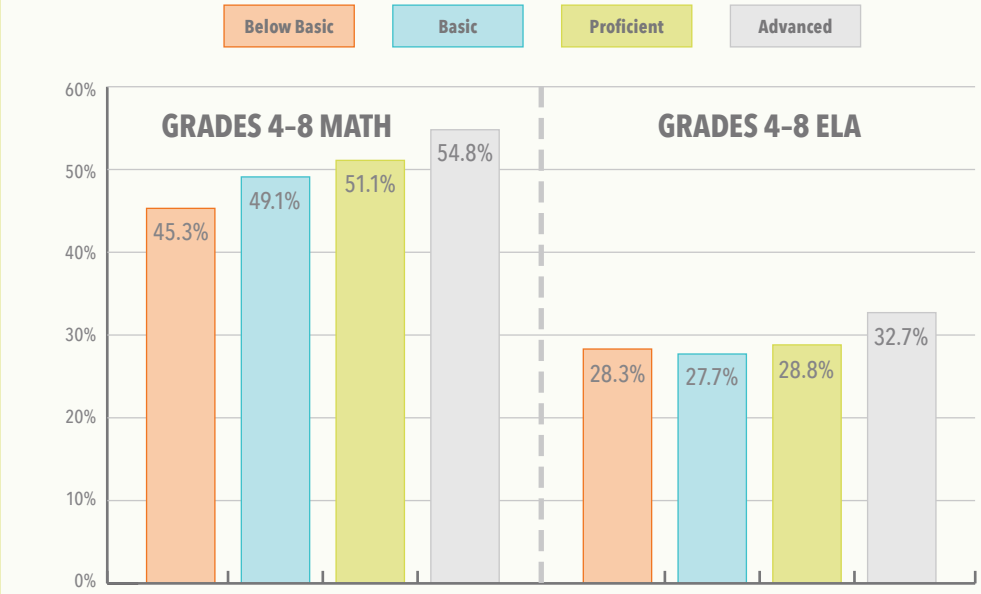


Figure 2. Percent of students at each proficiency level (2013–14) who had a highly effective teacher in grades 4–8 math and ELA (2014–15).

In English language arts (ELA), the gap between advanced and below basic students' access was much smaller; however, this was due in part to the low supply of highly effective teachers in ELA statewide. Unfortunately, students across the state had more limited access to highly effective ELA teachers than in math. We explore this more fully below.

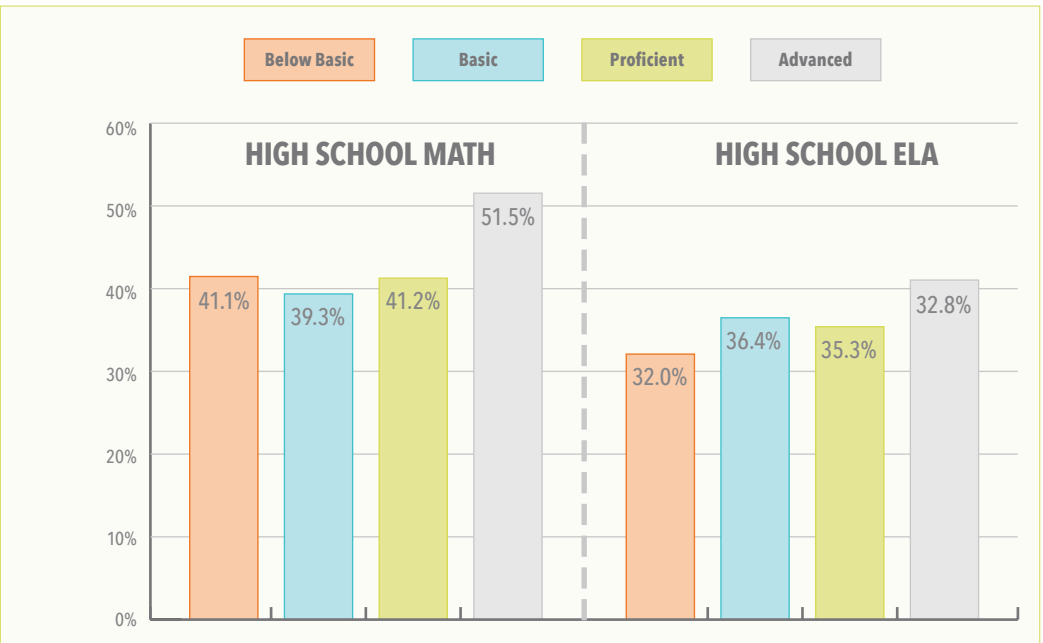


Figure 3. Percent of students at each proficiency level (2013–14) who had a highly effective teacher in high school math and ELA (2014–15).

Five out of ten advanced students had a highly effective math teacher in grades 4-8, while only four out of ten below basic students had a highly effective teacher.

WHAT FACTORS AFFECT STUDENTS' ACCESS TO HIGHLY EFFECTIVE TEACHERS?

To improve our lowest-performing students' access to highly effective teachers, it is important to understand what factors affect this access. In particular, we focused on identifying district-level factors as these are factors we can most readily pinpoint and support statewide. Within a district, many factors affect students' access to highly effective teachers. Below we focus on (1) the district's supply of highly effective teachers, (2) how those highly effective teachers are distributed between schools in the district, and (3) how highly effective teachers are distributed within schools in the district (as shown in Figure 4).

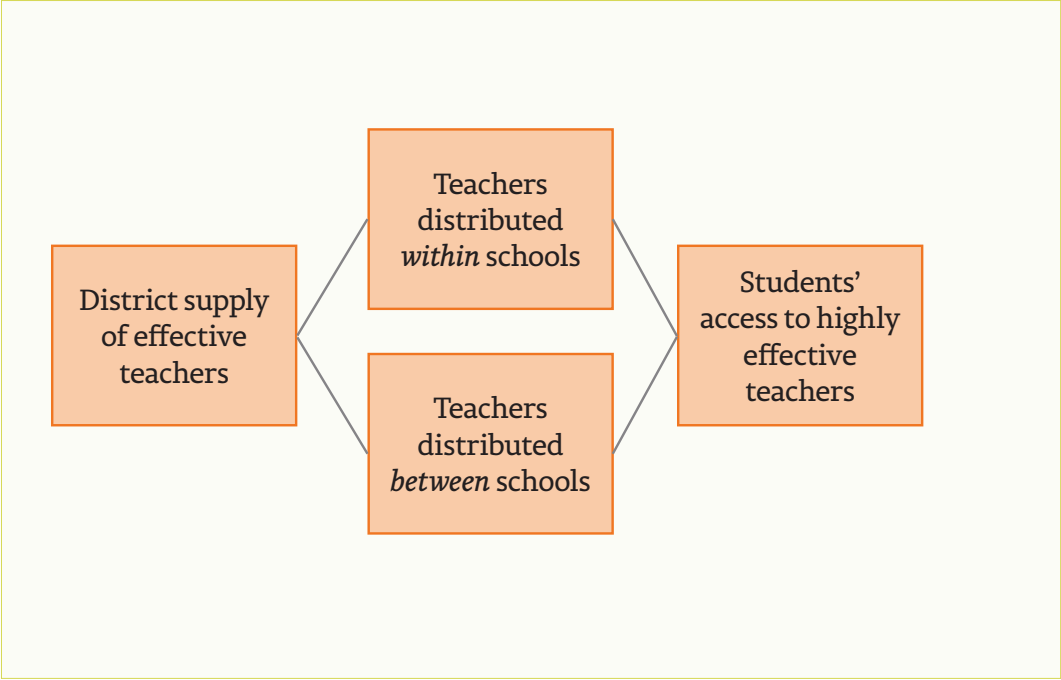


Figure 4. Factors affecting students' access to highly effective teachers within a district.

Supply

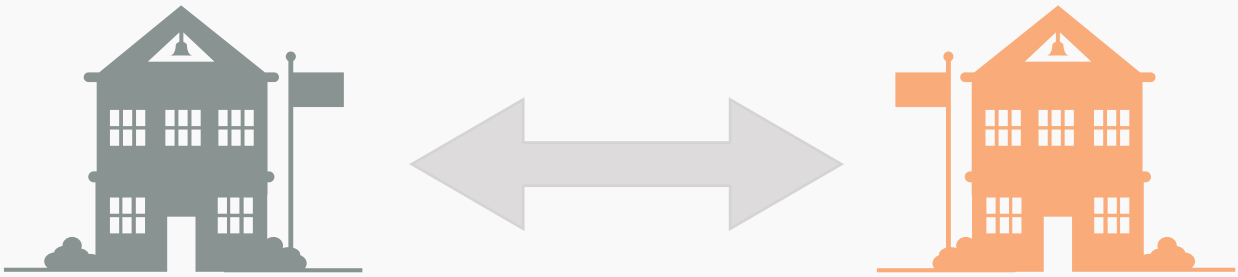
In order to provide access to highly effective teachers for any students, these teachers must be present in a district. Districts vary greatly in their proportion of highly effective teachers. We explore this more fully in the following section.

A district's supply of highly effective teachers is affected by many factors including the quality of and proximity to teacher preparation programs; geographic labor markets; teacher turnover rates; recruitment, hiring, and retention practices; teacher evaluation; professional development; and compensation strategies.

Access: Within- and between-school factors

Students' access to the highly effective teachers in their district is affected by myriad factors both between and within schools. Teacher sorting takes place across–or between–schools driven by factors such as teacher preferences, district hiring and staffing practices, school leadership, and school location. Examples of within-school factors affecting access include student-teacher assignment processes, incentives (or disincentives) for teaching lower-performing students, and teachers' involvement in course selection.

Between-school gaps occur when more effective teachers are assigned or selected to teach in schools that serve certain students in mass, dependent on characteristics such as socioeconomic background or prior achievement.

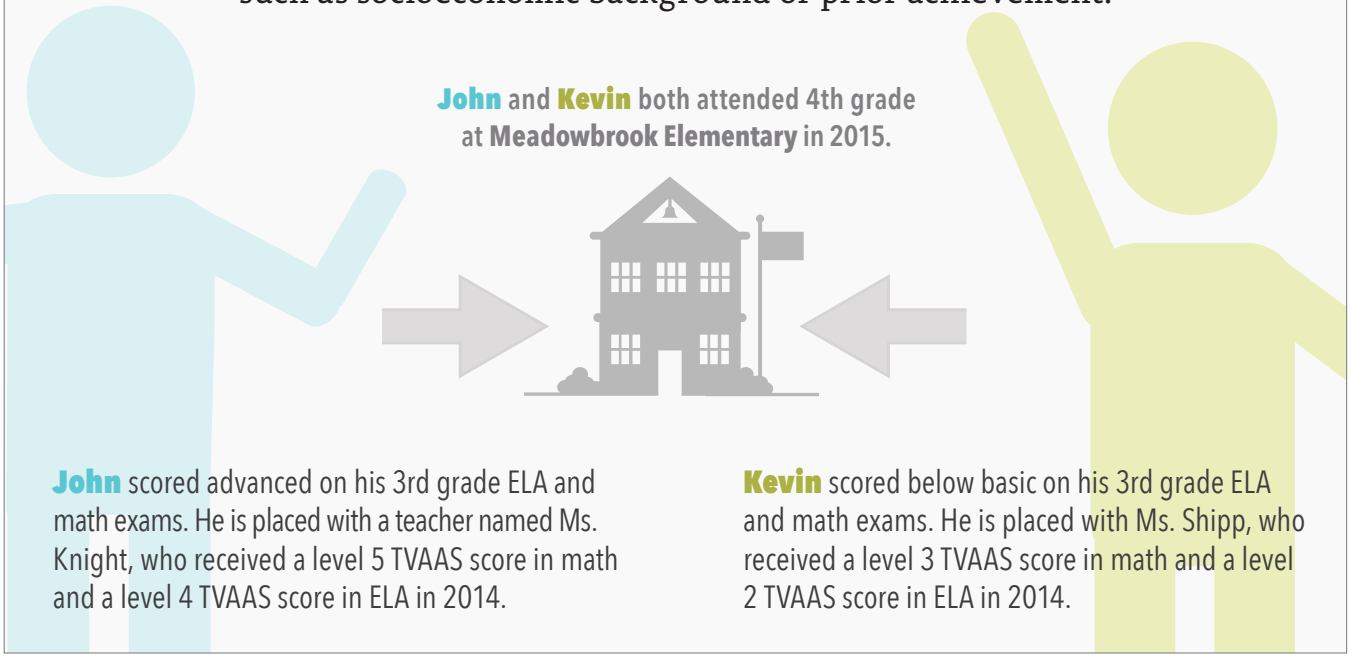


Hope Elementary in Hope School District has three 4th grade teachers. No teacher earned a TVAAS score higher than a 3 in math or ELA in 2014. Most 4th grade students at Hope in 2015 scored below basic on their 2014 assessments.

Liberty Elementary in Hope School District has five 4th grade teachers. All teachers earned a TVAAS score of 4 or higher in math and ELA in 2014. Most 4th grade students at Liberty in 2015 scored advanced on their 2014 assessments.

Within-school gaps occur when certain students are assigned to more or less effective teachers in their school, dependent on characteristics such as socioeconomic background or prior achievement.

John and **Kevin** both attended 4th grade at **Meadowbrook Elementary** in 2015.



John scored advanced on his 3rd grade ELA and math exams. He is placed with a teacher named Ms. Knight, who received a level 5 TVAAS score in math and a level 4 TVAAS score in ELA in 2014.

Kevin scored below basic on his 3rd grade ELA and math exams. He is placed with Ms. Shipp, who received a level 3 TVAAS score in math and a level 2 TVAAS score in ELA in 2014.

WHAT IS THE SUPPLY OF HIGHLY EFFECTIVE TEACHERS IN TENNESSEE?

Statewide, the percentage of highly effective teachers (TVAAS level 4 or 5[4]) varies greatly by subject. Figure 5 shows the statewide distribution of teachers by TVAAS level in math and ELA subjects in 2014. As shown in this figure, Tennessee had the greatest proportion of highly effective teachers in grades 4–8 math, closely followed by the high school math courses. Grades 4–8 ELA had the lowest proportion of highly effective teachers,[5] followed by high school ELA courses.

We also found that the supply of highly effective teachers at the district level varied significantly. In some districts, a large proportion of the teaching force was highly effective, while in other districts, there were few to no highly effective teachers (see Figure 6).

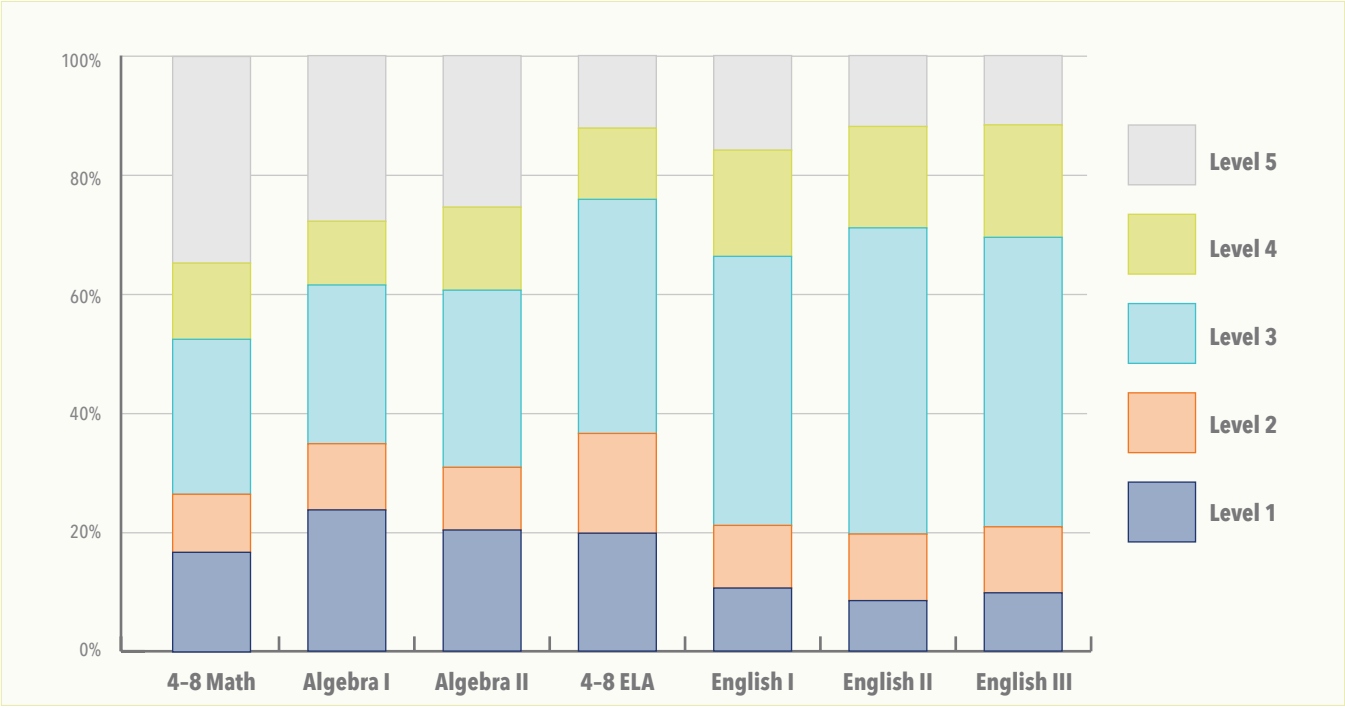
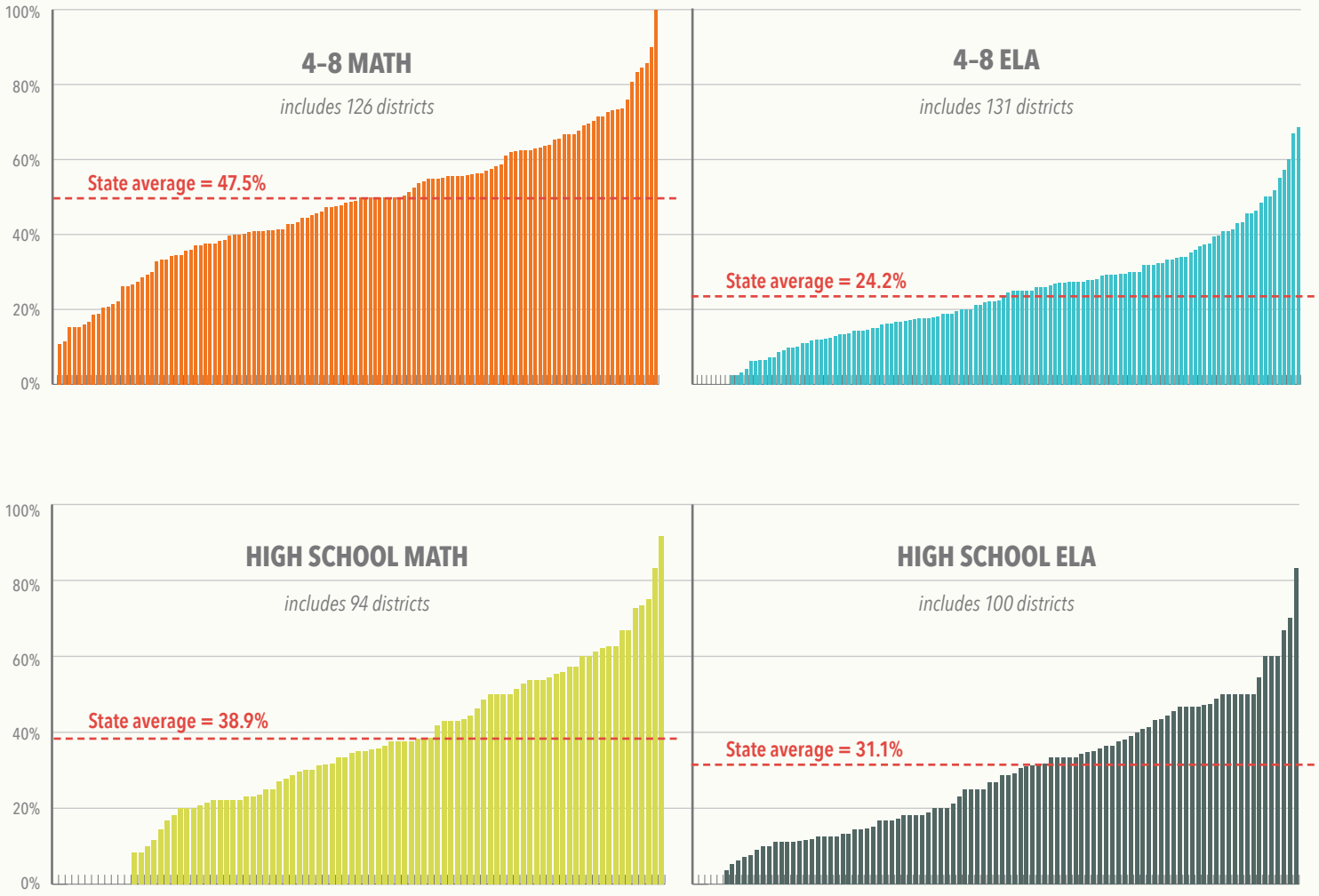


Figure 5. Supply of teachers in Tennessee by TVAAS level.

In some districts, a large proportion of the teaching force was highly effective, while in other districts, there were few to no highly effective teachers.



Each bar represents one district.

Figure 6. Supply of highly effective teachers in four content areas in each Tennessee district.
Note that a district had to have at least 6 teachers with TVAAS scores to be included in these calculations.

HOW ARE HIGHLY EFFECTIVE TEACHERS DISTRIBUTED WITHIN DISTRICTS AND SCHOOLS IN TENNESSEE?

After examining the supply of highly effective teachers at the state and district level, we sought to understand how these teachers were distributed to Tennessee students. In particular, we were interested to see if students with the greatest need for access to highly effective teachers (e.g., the lowest-performing students) were granted this access. To conduct this analysis we used data from the prior year (school year 2013–14), before students and teachers were matched. We used two measures: teacher TVAAS scores—used to classify teachers as highly effective—and student proficiency levels (see Figure 7). We used teacher effectiveness (i.e., TVAAS) and student achievement data (i.e., proficiency levels) from 2013–14 because this is the information schools and districts had when making decisions about how students and teachers were paired together at the start of the 2014–15 school year.

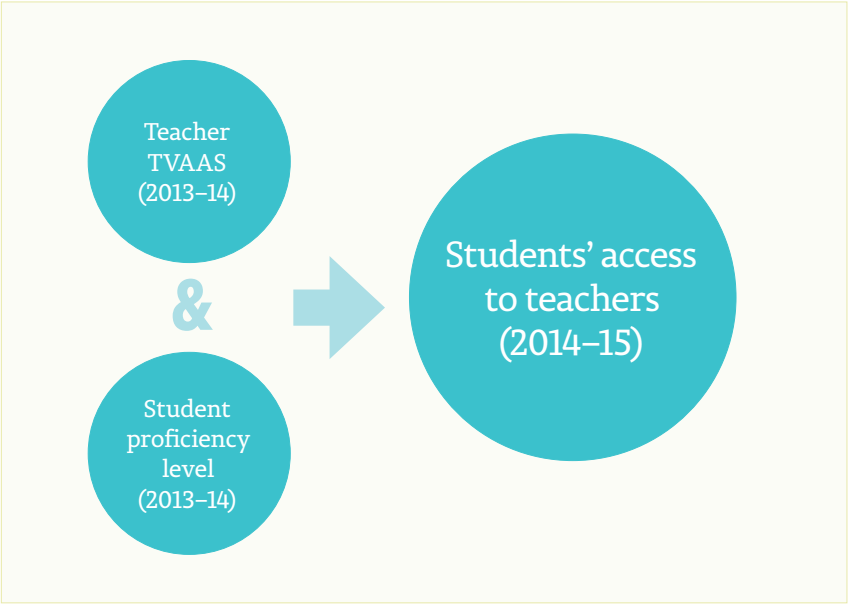


Figure 7. Student-teacher matching data.

The Effective Teaching Gap

We use the term "effective teaching gap," or ETG, to refer to the differential access to highly effective teachers that exists between advanced and below basic students. To determine a district or school's ETG we used the calculation below.

Under this calculation, for example, if a district matched 82 percent of its advanced students to a highly effective teacher and 67 percent of its below basic students to a highly effective teacher, the result would be an ETG of 15 percentage points. A zero or negative ETG is desirable, as it indicates that the group with the greater need for access to highly effective teachers had equal or greater access.

State-level ETGs

The size of state-level gaps demonstrated that, while more advanced students than below basic students had access to highly effective teachers, the gaps were not enormous. The largest gap was approximately 10 percent in high school math.

Effective Teaching Gap = Percent of advanced students with highly effective teachers − Percent of below basic students with highly effective teachers

District-level ETGs

While across the state the largest ETG between advanced and below basic students was approximately 10 percent, examining district-level data we found a great deal of variation with some districts having very large ETGs and others very small. This suggests that the state-level gap in access was driven by particular districts. Figures 9 and 10 show the grade 4–8 math and ELA ETGs for all Tennessee districts that had at least 6 highly effective teachers *and* 10 below basic students *and* 10 advanced students.

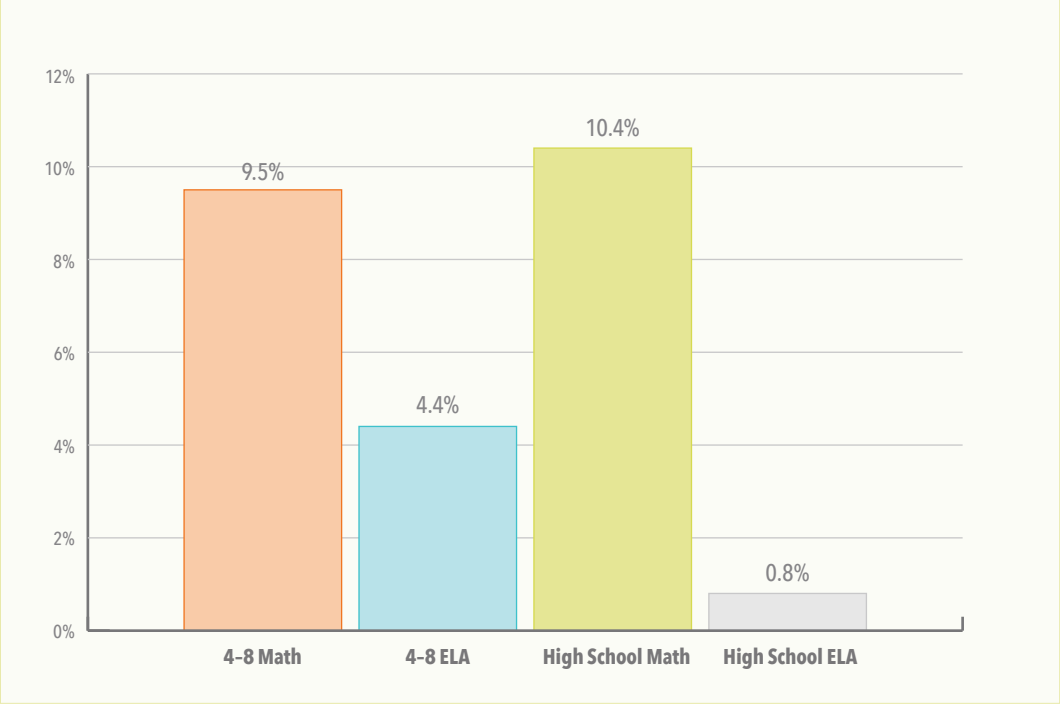


Figure 8. Statewide ETGs between advanced and below basic students in 2015.

Looking at the distribution of math ETGs (Figure 9), we see that one district had an ETG of over 50 percent. This means that twice as many advanced students had a highly effective teacher compared with below basic students. Other districts had negative or zero ETGs– these are the bars at or below zero percent on the left side of the graph in Figure 9. Out of those districts with enough data to be evaluated, 45 had negative or zero gaps in grades 4–8 math and 53 had positive gaps. In grades 4–8 ELA (Figure 10), we generally found smaller gaps overall. Again, this was due in part to the limited availability of highly effective grades 4–8 ELA teachers across the state. We found that 37 districts had negative gaps and 46 had positive gaps. Taken collectively, the relatively small statewide ETGs and the wide range of district-level ETGs indicate that strategies for addressing the gaps in access to highly effective teachers will need to be district-specific.

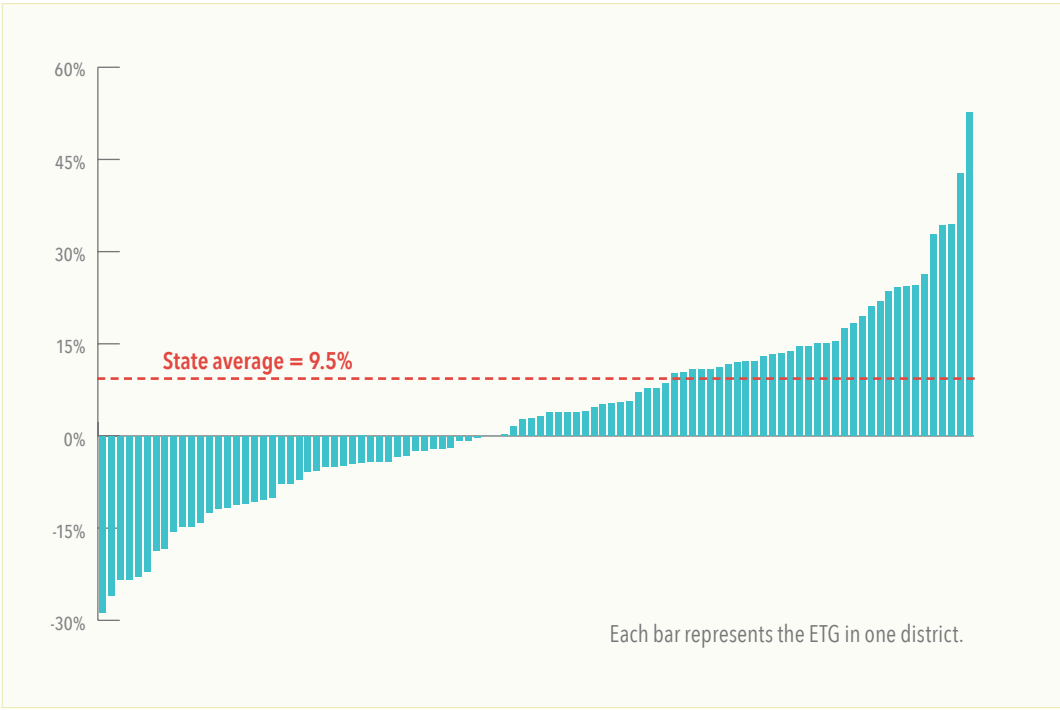


Figure 9. ETGs in Tennessee districts in 4-8 math.

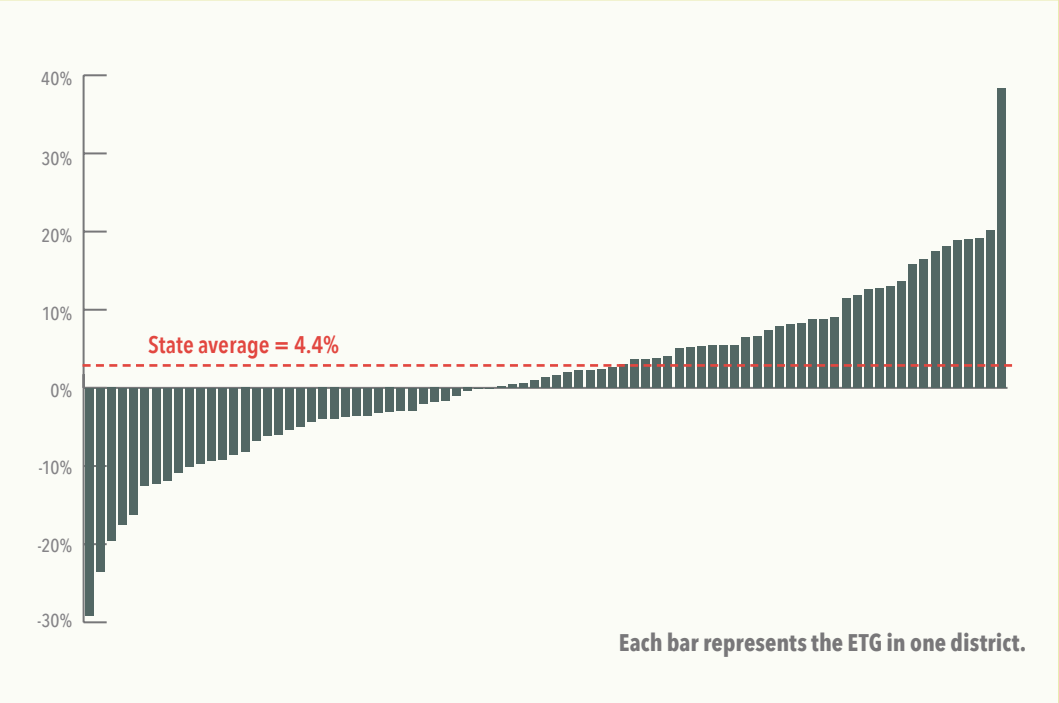


Figure 10. ETGs in Tennessee districts in 4-8 ELA.

School-level ETGs

Much like the need for district-specific targeted support, we imagined that within districts there may be some schools in need of more support than others. As expected, school-level ETGs within districts also varied greatly. Figure 11 shows the school-level ETGs in high school math and ELA for an example district.[6] Recall that a positive gap means that more advanced students had highly effective teachers than below basic students. This district's overall ETG in high school math was approximately 23 percent. We see that most of its schools had a large high school math gap and one school in particular appeared to be struggling with a gap of about 43 percent (school 2). This demonstrates that the example district's problem with equitable access to highly effective teachers was occurring across the district, rather than localized within a single school; however, this data also shows that certain schools were struggling (e.g., school 2) more than others.

School	High School ELA ETG	High School Math ETG
1	N/A	5.5%
2	-20.6%	43.1%
3	10.0%	21.8%
4	-35.9%	-27.3%
5	8.2%	26.6%

Figure 11. Example district's school-level ETGs for high school math and ELA.

WHAT ARE WE DOING AND WHAT CAN WE DO TO IMPROVE STUDENTS' ACCESS TO HIGHLY EFFECTIVE TEACHERS?

In this report, we have:

- identified the importance of students' equitable access to highly effective teachers, and
- demonstrated that equitable access issues exist in Tennessee mostly at the district- and school-levels.

Given these findings, how do we improve access to highly effective teachers across the state? We are first aiming to help districts identify where their equitable access issues lie. On a survey of district leaders in December 2015, 63 percent of district leaders[7] reported using educator evaluation ratings when making decisions regarding teacher assignment to classrooms/students. While this shows that many districts do take into account evaluation scores in student-teacher assignment procedures, almost 40 percent of districts are not doing so. Thus, we believe that there are important intervention efforts to be implemented at the state, district, and school levels.

State-level actions targeting equitable access

We believe that providing district and school leaders with data on highly effective teachers' effect on low-performing students' growth—such as that presented in this report—coupled with specific district- and school-level data will be an important lever for change. Because of this, we have begun the larger conversation around human capital and equity across the state through the four phases shown in Figure 12. Collectively, these phases aim to improve equitable access to highly effective teachers for Tennessee students.

In Phase 0 we furthered our implementation of existing policies and practices aimed at improving the supply of highly effective teachers and students' access to these teachers. Initiatives like teacher evaluation and differentiated pay have helped to address issues of both supply and access in the last several years. Other initiatives have focused specifically on improving the incoming and existing supply of educators. We have made changes to educator preparation policy, embarked on new partnerships to improve recruitment and hiring, and invested heavily in improving professional learning opportunities for teachers.

As part of Phase 1, which began in 2015, we started sharing new data metrics with districts through human

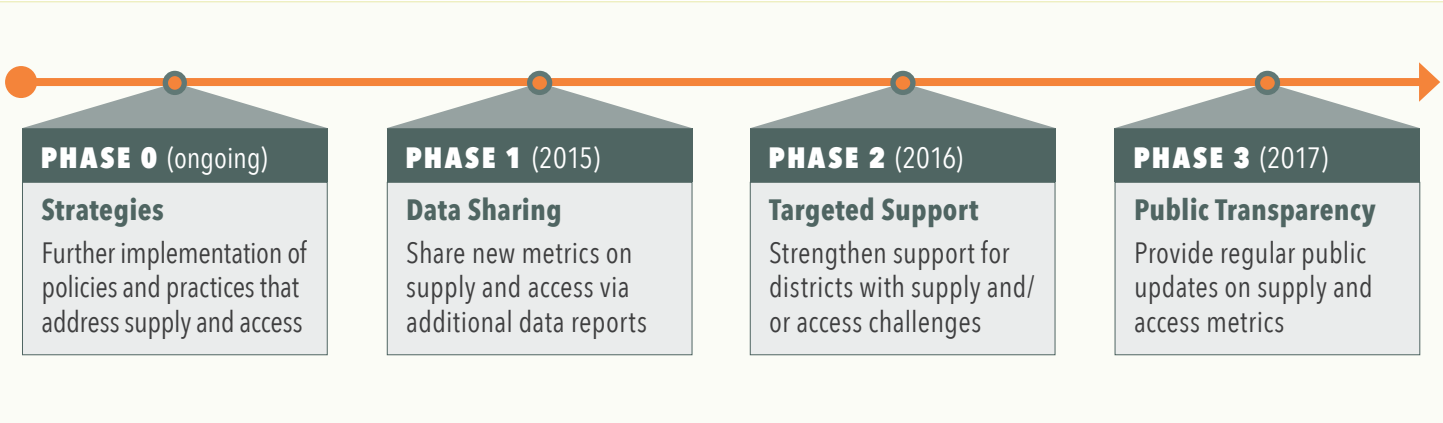


Figure 12. State-level actions aimed at improving equitable access for Tennessee students.

capital reports and allowing districts the time to develop and implement responses to this new information. Phase 2 in 2016 will focus on a series of targeted supports for those districts identified as having the greatest challenges. Finally, in 2017, Phase 3 will ensure public transparency by reporting on our progress in closing equity gaps.

Tennessee Succeeds

In addition to an explicit focus on human capital strategies, broader statewide efforts also aim to translate into improvements in equitable access to highly effective teachers for Tennessee students. These efforts are part of the department's strategic plan, Tennessee Succeeds. This plan includes targeted strategies focused around five major priorities: Early Foundations and Literacy, High School and the Bridge to Postsecondary, All Means All, Educator Support and District Empowerment.[8] For example, within the priority "All Means All," there is a strategy that calls for drawing attention to systemic gaps in different student groups' access to highly effective teachers. On the following page is a sampling of the strategic plan's initiatives and accompanying strategies that we believe will improve students' access to highly effective teachers in Tennessee schools.

District- and school-level actions

At the state level, we have identified numerous efforts aimed at improving equitable access to highly effective teachers. While we believe these strategies will improve equitable access, districts and schools should also begin using their data to identify potential issues in this domain.

Examining school-level ETGs can help district leaders identify problems within schools as well as between schools. For example, if a district has a large ETG and its schools all have similar ETGs, there is a likely pattern of inequitable access to highly effective teachers between students at different proficiency levels across the district. Additionally, recognizing the differences between schools' ETGs will draw attention to which schools are struggling more with equitable access and potentially in need of the greatest level of targeted support.

It is also worth examining schools with substantial negative gaps, as they have had greater success providing their lowest-performing students with access to highly effective teachers. These schools could provide valuable insight into best practices to share with other schools in the district.

Districts should also consider the role that teacher supply plays in issues of equity within and between their schools. If supply is a major constraint for a district, the district needs to mitigate this problem while focusing on immediate equity issues. There are many strategies a district can employ to improve its supply of highly effective teachers. These strategies should target both current and new/prospective employees. For example, a district might consider professional development targeted at existing teachers who have lower TVAAS levels to help these teachers move toward becoming highly effective. The district may also consider a longer term strategy that includes building or improving partnerships with effective educator preparation providers (EPPs), targeted recruitment activities, and compensation structures to attract and retain teachers to higher need schools or subjects.

We must ensure that our students who are furthest behind have equitable access to highly effective teachers.

Strategic Plan Initiatives and Strategies

to Improve Students' Access to Highly Effective Teachers

Educator Support

Supporting the preparation and development of an exceptional educator workforce.

STRATEGY

Focus educator preparation providers on outcome measures via program accreditation and the educator preparation program report card.

CONNECTION TO EQUITABLE ACCESS As teacher preparation improves and more classroom-ready teachers enter Tennessee schools, more of our students will gain access to highly effective teachers.

STRATEGY

Improve the accuracy of educator evaluation and the quality of the feedback educators receive.

CONNECTION TO EQUITABLE ACCESS As teachers better understand strengths and weaknesses in their practice, they will be able to participate–with help and guidance from district leaders and regional supports through Centers of Regional Excellence (CORE)–in targeted professional development. As teachers work to address weaknesses in their practice, they will improve, thus increasing the supply of highly effective teachers across the state.

All Means All

Providing individualized support and opportunities for all students with a focus on those who are furthest behind.

STRATEGY

Improve the quality of interventions and implementation of Response to Intervention and Instruction (RTI^2) beginning at the elementary school level.

CONNECTION TO EQUITABLE ACCESS The RTI^2 model seeks to address skills-deficits, eliminating barriers so that all students can access and benefit from high-quality core instruction while also benefiting from high-quality interventions as determined by specific areas of need. This framework specifically supports those students who are furthest behind to systematically help them gain access to high-quality instruction.

STRATEGY

Increase equitable access to highly effective teachers across student subgroups.

CONNECTION TO EQUITABLE ACCESS This strategy calls for explicit attention to students' access to highly effective teachers with the goal of closing systematic gaps in achievement between different groups of students.

Early Foundation and Literacy

Building skills in early grades to contribute to future success.

STRATEGY

Strengthen reading instruction statewide through quality training options and the expansion of a statewide literacy coach initiative.

CONNECTION TO EQUITABLE ACCESS This explicit focus on strengthening reading instruction will lead to improvements in teachers' reading instructional practices. As these practices improve, more teachers will transition into being highly effective, thus increasing the supply of highly effective ELA teachers across the state.

District Empowerment

Providing districts with the tools and autonomy they need to make the best decisions for students.

STRATEGY

Increase district- and school-level data transparency and usability.

CONNECTION TO EQUITABLE ACCESS This strategy includes multiple facets that directly support equitable access. One such facet is an improved and expanded online state Report Card. As described above, it is the department's goal to eventually include equity data on the Report Card, which will bring further attention to equity issues that may exist in a district or school. However, this increased public accountability will not come without directed supports from the department. Also included within this strategy is the development of communication toolkits that will assists districts in sharing their own data.

Final thoughts

In order to fulfill our vision of preparing all students to be college and career ready, we must ensure that our students who are furthest behind have equitable access to highly effective teachers. We carefully analyzed both supply and access data revealing a great deal of district variation in the percentage of highly effective teachers employed across Tennessee as well as in the type and size of equity gaps. These data highlight the need for us to focus on the key state levers for increasing the supply of highly effective teachers and improving access, while also supporting district-level analyses of root causes and locally developed strategies. We believe that our sequence of statewide supports, coupled with broader conversations about these data, will increase the supply of highly effective teachers and improve access for our students who are furthest behind.

NOTES

1. Sanders, W. L., & Rivers, J. C. (1996). Cumulative and residual effects of teachers on future student academic achievement (Research Progress Report). Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center.

2. Ibid.

3. When examining student access to effective teachers we considered achievement level, race, and socioeconomic status. Given that the majority of Tennessee schools are homogeneous in terms of racial and economic makeup, we chose to focus on differences in access by achievement level. Additionally, both national and state-level data present support for the importance of highly effective teachers to students who are furthest behind academically.

4. Up until 2014, TVAAS scores in grades 4 – 8 used the base-year approach to set the expectation for growth. When using the base-year approach, student growth in a given year is compared to the growth of students with similar prior achievement in the base year. Through 2014, data from the 2008-09 school year was used as the base year for grades 4 – 8. In early grades and end of course subjects, the intra-year approach is used, meaning that student growth in a given year is compared to the growth of students with similar prior achievement in the same school year. Beginning in the 2014-15 school year, the department directed SAS to use the intra-year approach in TVAAS calculations for grades 4 – 8. This approach more closely aligns with the methodology used in the early grades and end of course subjects. Because these analyses necessitated using TVAAS data from the 2013-14 school year, analyses from subsequent years may look somewhat different as they will use the intra-year TVAAS calculations. For more information please see the technical documentation at this link: http://tn.gov/assets/entities/education/attachments/tvaas_technical_documentation_2015.pdf.

5. One current state-level initiative: Read to be Ready is beginning to tackle this statewide challenge. For more information, see http://www.tn.gov/readtoberready.

6. Note that in order to calculate ETGs at the school level, a school had to have at least 4 highly effective teachers and 10 below basic students and 10 advanced students in a given content area.

7. One hundred and thirty district leaders responded to the survey which represents an approximate response rate of almost 90 percent.

8. For a copy of the strategic plan, please visit http://tn.gov/assets/entities/education/attachments/strategic_plan.pdf.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