

SREB

# Inequity in Education: Identifying Variations in Students' School and Classroom Experiences

## Research Report

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Southern  
Regional  
Education  
Board

[sreb.org](http://sreb.org)



This report was prepared by Rebecca Purser, Paula Egelson and Chris Fuga of the Southern Regional Education Board with quantitative analysis support from Resonant Education. For more information on SREB's student and teacher surveys, visit [SREB.org/surveys](https://www.sreb.org/surveys).

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## About SREB

The Southern Regional Education Board works with states to improve public education at every level, from early childhood through doctoral education. We help policymakers make informed decisions by providing independent, accurate data and recommendations. We help educators strengthen student learning with professional development, proven practices and curricula. And we help policymakers, institutions and educators share scarce resources to accomplish more together than they could alone.

The nation's first regional interstate compact for education, SREB was created in 1948 by Southern governors and legislators who recognized the link between education and economic vitality. SREB is a nonpartisan, nonprofit organization headquartered in Atlanta. Our 16 states are Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia. Our work is funded by member appropriations, as well as by contracts and grants from foundations and from local, state and federal agencies.

## How We Work

SREB's approach to working in its 16-state region and beyond includes analyzing and publishing on critical issues in education, like equity. We convene and engage decision-makers in education, government and business around these issues. We also support taking action on critical issues in states and schools and in policy and practice.

This report on inequities in students' school and classroom experiences reflects SREB's overall approach to our work. Our analyses of more than 7,800 student survey responses revealed more differences in students' school and classroom experiences within schools than between separate schools. We prepared this report to inform educators, decision-makers and researchers about these findings and the potential impact of not taking action to address inequity. We will also use this report to support professional development and school improvement in districts and schools served by SREB.





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## Executive Summary

Equity in education is a topic of critical national importance. Though often used interchangeably with the term *equality*, *equity* in education refers to efforts made to acknowledge the differences in socioeconomic status, race, parental education or other characteristics that may exist between student subgroups and to provide individualized supports that increase access to quality learning experiences for each student.

Inequity in education, by contrast, frequently manifests as lower expectations, unchallenging curricula or assignments, poor school climate and limited access to higher-level courses or college- and career-preparatory programs of study.

Research tells us that systematic practices like tracking — that is, routing students based on their prior academic achievement into higher- or lower-level classes, starting as early as the elementary grades — can be particularly destructive when those practices reflect socioeconomic or racial inequalities. Minority and low-income students are more likely to be unequally distributed across tracks, tracks in which they may remain stuck through the middle grades and high school (Oakes & Guiton, 1995). The percentage of students who complete a rigorous college- and career-preparatory program of study by the time they graduate is lowest in schools that serve mostly minority and low-income students (Winkler & Warren, 2019).

School or classroom practices that even unconsciously perpetuate bias and foster lower expectations for minority and low-income students can be damaging. When students are not held to high expectations, their grades and achievement suffer, and they may lack the encouragement and support they need to pursue further education and careers (Budge & Parrett, 2018).

Persistent, significant gaps in achievement and opportunity for minority and low-income students reflect the nation's continuing challenge to educate its children. That's why the Southern Regional Education Board's Making Schools Work framework of Key Practices for school improvement — see [sreb.org/high-schools#Practices](http://sreb.org/high-schools#Practices) — stresses the importance of leveling the academic playing field for students by encouraging schools to provide meaningful learning experiences that advance readiness and inspire students to make the effort to succeed. At the time this report was conceived, those Key Practices were:

1. Intellectually demanding career pathway programs of study
2. Ongoing professional development on powerful literacy and mathematics practices
3. Extended learning time and personalized supports for students
4. Literacy and math readiness courses
5. Project-based assignments
6. Structured work-based learning experiences
7. Academic and career counseling and exploratory experiences
8. A redesigned senior year
9. A culture of continuous improvement and high expectations

SREB offers biennial student surveys that are structured around its Key Practices. Surveys and survey reports empower schools to analyze and compare data on students' achievement and their perceptions of school and classroom experiences, identify strengths and weaknesses in schools' provision of challenging curricula and instruction, confront latent biases and adopt practices that promote success for each student.

## Examining Variation in Students' School and Classroom Experiences

This report arose from surprising results from student surveys administered in 2018 to over 7,800 students in 15 states across the U.S. For the Spring 2018 survey, SREB partnered with Resonant Education, formerly known as My Student Survey, to assess the reliability and validity of its surveys and administer them to high schools in its Making Schools Work network. In brief, we designed a study that would examine:

- Whether survey responses differed more within a single school or between different schools
- Whether the school and classroom experiences of high-performing students differed from students who did not meet readiness benchmarks on national assessments
- Which variables had the strongest explanatory power for variation in students' school and classroom experiences

We were struck by results showing that high school students' school and classroom experiences — including their perceptions of the quality of academic and technical instruction, support from counselors and high expectations from teachers and school leaders — **differed much more between students within the same school than between students at different schools.** Students' experiences of project-based learning, challenging literacy and mathematics instruction, and their school's culture of expectations showed the greatest variation in responses within schools.

High school students' school and classroom experiences differed much more *between students within the same school* than between students at different schools.

Given this surprising finding, we wanted to further explore the potential sources of this variation. Survey responses were thus analyzed for **high-performing students** — students who reported that they had taken the ACT or SAT and had either a combination of an SAT Reading/Writing score of 480 or higher and an SAT Math score of 530 or higher or a combination of an ACT reading score of 22 or higher and an ACT math score of 22 or higher — and **“All Other” students**, students who reported that they had taken the ACT or SAT but did not meet these benchmark scores.

We also examined key variables for their potential impact on students’ experiences, including gender, race, socioeconomic status, prior achievement, self-reported grades, educational aspirations, Algebra I course-taking in middle school, parental education, being on-track to graduate and the support and understanding students received from their parents related to their educational and career goals.

We found that:

- **A large majority of high-performing students were both non-minorities and had a higher assumed socioeconomic status.**
- Positive student survey responses across all of SREB’s Key Practice areas were **higher for high-performing students than for “All Other” students.**
- For almost every question on the student survey, **high-performing students reported a higher percentage of positive school and classroom experiences than their peers by an average of 8%.** While the percentage difference between the two groups is noteworthy, it is still small enough to indicate that **being a high-performing student is not the sole determinant of a student’s experiences within a school.**
- **When examining the relationship between students’ personal variables and their school and classroom experiences, students’ educational background and home life were statistically significant.** Variables related to students’ educational aspirations and the support and understanding they receive from their families were bigger determinants of their school and classroom experiences than their demographic characteristics.

## Combatting Inequities in School and Classroom Practices

Leveling the playing field and providing enriching, inspiring school and classroom experiences for all students is no simple task — but it *is* possible. SREB’s Key Practices can help schools overcome the effects of a history of low performance and behavioral problems, economically challenged communities, highly transient populations, low parental engagement and issues with bias toward minority students.

Drawing on SREB’s Key Practices and the results of this study, we recommend that schools:

- **Cultivate a culture of high expectations for all students, not just the highest performing students.** School leaders and teachers can focus less on the obstacles facing their school, and more on the belief that students can meet high expectations with encouragement and support.
- **Examine bias in schools and classrooms and provide educators with training to combat it.** By asking questions related to challenging assignments, expectations, student supports and other indicators of quality learning experiences, SREB’s student surveys probe whether schools may be setting a low bar for achievement and allowing biased thinking about students’ academic ability to affect their overall school climate. School leaders who provide equitable learning opportunities do not ignore how bias manifests itself in schools — instead, they actively unpack the issue to recognize and respond accordingly through anti-bias education.
- **Personalize the school through family and community involvement in academic and career counseling and a teacher-adviser system.** Teachers and school counselors can create opportunities for students and parents to explore and understand their interests and aptitudes and set postsecondary and career goals. Personalization and one-on-one student-staff interactions keep students from getting lost in the crowd.
- **Build strong academic and career advisement and guidance programs that focus on what the school *can* do as opposed to what families at home cannot.** Successful schools recognize that while students’ lives at home and personal characteristics can affect their academic trajectories, school-based systems and supports can bridge the gap for students with lower prior achievement and less parental support and understanding of their educational and career goals.
- **Closely track achievement and other student data and set annual incremental goals based on these data.** School leaders can prioritize the ongoing use of data to evaluate progress, measure outcomes and set goals for improving achievement and readiness for all students. Leaders and teachers can display charts and graphs of achievement around the school and celebrate results.
- **Increase access to higher-level courses and offer more Advanced Placement, International Baccalaureate, honors or college-level course options to students.** Caps on AP, IB, honors and college-level courses should be eliminated, giving all students the opportunity to rise to a challenge.

Leveling the playing field and providing enriching, inspiring school and classroom experiences for all students is no simple task — but it *is* possible.

- **Use career pathway programs of study to attract underrepresented and nontraditional students to challenging courses.** Quality career pathway programs help students understand what is required academically for them to meet their career goals. They can also shorten the time it takes — and lower the cost — to earn industry or postsecondary credentials.
- **Provide intervention programs and emphasize no-failure policies.** Schools can provide individualized intervention programs that help students who are on the margins of academic achievement prepare for their next steps beyond high school.

We believe this study offers a critical opportunity for educators to engage in self-reflection. We encourage school and district leaders and teachers to ask themselves whether similar variations in students' school and classroom experiences may be present in their schools. If they are, how can leaders and teachers create systems that promote quality learning experiences, alleviate the effects of individual student factors on students' experiences at school and seek to level the playing field for each student?

Student survey data is a powerful yet often overlooked source that can be leveraged to better understand how schools work. The findings and recommendations made in this report — as well as the research-based Key Practices on which SREB's student surveys are based — offer high value to school leaders, superintendents, state departments of education, school improvement teams and researchers who seek to ensure that all students have the supports they need to reach for and achieve their goals.



**Dale Winkler**

Vice President, School Improvement  
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## Introduction

*“Our society cannot afford a two-tiered system in which the affluent have access to superior education, while everyone else is subjected to a dull and incoherent classroom experience. Academic excellence, educational equity, and fairness demand a strong foundation of knowledge for all learners.”*

— E.D. Hirsch, Jr.

SREB’s Making Schools Work approach to school improvement stresses the importance of leveling the academic playing field for students by encouraging schools to provide meaningful learning experiences and encouragement to advance the college and career readiness of *all* students, not just a select few.

SREB has found that persistent, significant gaps in achievement and opportunity for black and Hispanic students and students from low-income families reflect the region’s continuing challenge to educate every one of its children. As such, **SREB’s organizational *Strategic Plan 2019-2024* is grounded in a vision of equity in school and classroom environments:** “*Each child and adult* in the SREB region will have high-quality educational opportunities that build on the rich diversity of the region and lead to productive, meaningful lives and robust economies” (SREB, 2019; emphasis added).

In education, the term *equity* is often used interchangeably with *equality*, but the two terms differ in meaning. The World Health Organization (2019) defines equity as “the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically or geographically.” In education, “equity means offering individualized support to students that addresses possible barriers, like poverty or limited transportation” (Waterford.org, 2019), while equality means treating all students in the same way. Equality is generic and group-focused; equity is adaptable and individual-focused. Budge and Parrett (2018) assert that treating all students the same, while sounding just and fair, is actually unjust and unfair. Equity is about increasing access to opportunity through equitable distribution of resources like time, people and money.

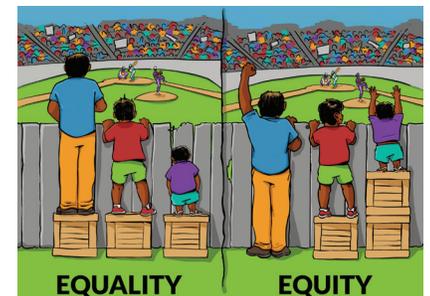
Inequity appears in education in countless ways, despite the expansion of programs and systems seeking to address it. For example, access to higher-level courses is an issue for all U.S. students, but particularly for minority students. Black and Hispanic students represent only 26% of students enrolled in gifted classes and Advanced Placement courses (U.S. Department of Education, Office for Civil Rights, 2014).

The problem of inequitable access to quality learning begins early. In middle school, only 38% of black and Hispanic students are enrolled in Algebra I, which is often considered the gateway to the higher-level courses needed to graduate from high school. Further, only 29% of all students who pass Algebra I are black or Hispanic (U.S. Department of Education, Office for Civil Rights, 2014; King, 2016). Restricted access to higher-level courses for minority students contributes to lower achievement and under-preparedness for postsecondary education and the workplace. This means that minority students who are not enrolled in and passing higher-level classes will likely face an uphill battle to catch up throughout high school, postsecondary education and their careers.

Identifying and remedying the problems associated with inequity in education is thus critical.

This report presents the results of an analysis of student survey data that can help educators, policymakers and researchers explore inequities in students’ school and classroom experiences and develop policies and practices that promote equity and access to quality learning for each student.

In the pages that follow, we present a review of the research on factors affecting inequity in education, including tracking, subgroups and college and career readiness, as well as what the literature says about variance in student achievement and experiences at the student, classroom and school levels. We then describe how this study defines high performance before outlining the study’s methods, student sample, research questions and design. Results are presented for Resonant Education’s analyses of the reliability and validity of the student survey and for SREB’s analyses of 2018 student survey responses. The discussion section includes recommendations for actions states, districts and schools can take to ensure that all students have the school and classroom supports they need to achieve their goals. We also discuss the implications of districts and schools not addressing inequity.



*Equality means treating all students in the same way. Equity is about increasing access to opportunity through an equitable distribution of resources.*

Illustration used courtesy of Interaction Institute for Social Change | Artist: Angus Maguire.

## Review of Research

### Inequity in Education: Tracking, Student Subgroups and Readiness

Both research and common sense suggest that each student experiences the curriculum, instruction and culture of a school differently. Such differences may be due to inequities in the range of supports and academically enriching experiences provided to students of different subgroups, such as high- and low-performing students and students from different racial or socioeconomic backgrounds. Abundant literature exists on inequity in K-12 education and the negative repercussions that inequitable practices have on students' long-term postsecondary and career success.

**Tracking.** One primary source of inequity in education is tracking students based on their academic abilities into higher- or lower-level classes. Students are typically assigned to lower-level classes based on their academic abilities beginning in the middle grades — and often even in elementary school — and continuing through high school.

Although long considered problematic, tracking becomes particularly serious when tracking patterns reflect socioeconomic or racial inequalities. Minority and low-income students are much more likely to be unequally distributed across tracks (Oakes & Guiton, 1995). For example, the percentage of students who complete a college- and career-preparatory curriculum — that is, a full sequence of higher-level courses — before graduating from high school is lowest in schools that serve large populations of minorities and economically disadvantaged students (Winkler & Warren, 2019). This results in an underrepresentation of minority and low-income students in honors, Advanced Placement or International Baccalaureate classes (Solorzano & Ornelas, 2002). Students who are grouped into lower-level courses experience a different quality of instruction, relationships with their teachers, expectations from school personnel and overall classroom climate (Oakes, 1985). Unfortunately, tracking occurs in a wide range of schools, both high- and low-performing, further stratifying existing gaps between student subgroups.

**Student Subgroups.** One way to identify inequity in education and tracking practices is to examine the accountability data of student subgroups. The federal No Child Left Behind Act of 2001 required schools to meet adequate yearly progress accountability measures across all subgroups of students. Although student subgroups may vary by state, they generally include racial or ethnic categories (e.g., white, black or African American, Hispanic, Asian, Pacific Islander, American Indian), as well as students with disabilities, English language learners and students who qualify for free and reduced-price lunch (Chenoweth, 2007).

Whether NCLB met its goal of closing racial and socioeconomic achievement gaps is debated, since few consistent trends have been identified since its passage (Reardon, Greenberg, Kalogrides, Shores, & Valentino, 2013; Kim & Sunderman, 2005). However, NCLB did initiate the practice of disaggregating student achievement data to understand which students within a school were thriving and which were falling behind. Much like NCLB, the current iteration of the Carl D. Perkins Career and Technical Education legislation, known as Perkins V, and the Every Student Succeeds Act also require states to disaggregate participation and performance data for each career and technical education program of study by race, ethnicity and other subgroups (Perkins Collaborative Resource Network, 2019a, 2019b).

**College and Career Readiness.** Inequity in education is not limited to disparities in the learning experiences of different racial and socioeconomic groups. In accordance with the objectives of Perkins V and ESSA, SREB emphasizes the equal treatment of core academic curricula and quality CTE programs, with a priority placed on each student completing a dual-purpose program of studies that combines the two (Bottoms & Sundell, 2017). However, some schools and even some state accountability systems are set up to prioritize core academics over CTE. SREB's Making Schools Work school improvement framework emphasizes balancing college readiness and career readiness based on the belief that all students, regardless of gender, race or socioeconomic background, can master challenging academic courses and CTE curricula when they are taught in an environment that encourages and inspires them to succeed (Winkler & Warren, 2019).

### School Effects on Student Variance

Variance in student achievement has been examined through much research at the student, classroom and school levels. Research suggests that a large proportion of variation lies within schools rather than between separate schools (Konstantopolous, 2005). In his 2009 meta-analysis of variance in student achievement, Hattie extends this finding: "In most western countries, take two students of the same ability, and it matters not which school they attend." A high level of variance within schools suggests that factors other than the school unit determine variation in student achievement. These factors may include school leadership, teachers, school attributes like finances, compositional factors like school size and classroom size, curriculum effects or classroom influences like class climate or disruptive behavior (Hattie, 2009). Hattie found that among school factors, characteristics of classroom climate, classroom management, small group learning, accelerated opportunities, peer influences and lack of disruptive behavior had the biggest impact on student achievement. Teacher factors like one-on-one or small group teacher interaction, strong student-teacher relationships, high expectations for students, teacher clarity and teacher professional development also had a large impact on student achievement (Hattie, 2009).

All students, regardless of gender, race or socioeconomic background, can master challenging academic courses and CTE curricula when they are taught in an environment that encourages and inspires them to succeed.

In terms of equitable school and classroom experiences within a school, Budge and Parrett (2018) attribute most inequity to the biases of teachers and school leaders. Bias in turn affects teachers' and leaders' behaviors toward students. These biases, while often subconscious and unintentional, manifest themselves in school and classroom policies related to absenteeism, behavior, homework, grading and classroom-based assessments. Comprehensive, personalized systems of extra help and support and structured systems of academic and career guidance are often lacking in schools that exhibit inequities.

## Defining High Performance

SREB often examines student academic performance through the lens of college and career readiness. A college- and career-ready student has demonstrated the academic, technical and workplace skills needed to succeed in a career in a key economic sector as well as in a broad range of postsecondary or industry credential and degree programs (Bottoms & Sundell, 2017).

We recognize that, when combined with scores from national assessments of student achievement, many sources of data can be strong predictors of student readiness, such as grade point averages, dual credit course enrollments and completions, and end-of-course tests (Bottoms & Sundell, 2017; Hein, Smerdon, & Sambolt, 2013; Davis, Stephan, Lindsay, & Park, 2015). High performance should encompass diverse quantitative and qualitative measures related to the attainment of academic, technical and work-readiness skills — also known as employability skills, soft skills or 21st-century skills. For example, Perkins V requires states to assess the progress of CTE students using these performance indicators: high school graduation rate, math and literacy proficiency on state assessments, postsecondary placement in education, training or the military, postsecondary credit or credential attainment, participation in work-based learning and enrollment of nontraditional students in CTE programs of study (Perkins Collaborative Resource Network, 2019b; Hyslop, 2018).



For the purpose of this study, we define *high performance* as meeting college- and career-readiness benchmarks on nationally-recognized assessments — the ACT or SAT — since SREB's student and teacher surveys are completed by schools nationwide. Future studies should draw upon the more diverse set of indicators of readiness described above.

## Methods

### SREB's Student Surveys

SREB's biennial school improvement surveys offer schools an opportunity to collect anonymous feedback about students' school and classroom experiences. Surveys ask about students' perceptions of instruction in their core academic and career pathway classes, the expectations and supports provided by teachers, leaders and staff at the school, and students' postsecondary and career goals, among other topics. In the decades in which SREB has administered variations of these surveys, we have found students to be remarkably truthful in their responses.

SREB's student and teacher surveys are designed to provide a summative look at how well schools are implementing the Key Practices of SREB's Making Schools Work approach to school improvement:

1. Intellectually demanding career pathway programs of study
2. Ongoing professional development on powerful literacy and mathematics practices
3. Extended learning time and personalized supports for students
4. Literacy and math readiness courses
5. Project-based assignments
6. Structured work-based learning experiences
7. Academic and career counseling and exploratory experiences
8. A redesigned senior year
9. A culture of continuous improvement and high expectations

[Although the 2018 student survey on which this report is based was organized around the nine practices presented above, SREB adopted a revised set of 10 Key Practices in 2019 — see Appendix A.]

SREB's student and teacher surveys are typically administered during the spring semester in even-numbered years to high schools, middle grades schools and technology centers participating in SREB's Making Schools Work network of schools. Although network participants are required to offer surveys in even-numbered years, schools may also choose to offer surveys every year. SREB administers the surveys electronically, analyzes survey response data and reports results for a modest per-school fee. Final survey reports summarize results around each of SREB's Key Practices and show average response scores for the school, for similar school sites and for all sites that participated in the surveys.

For the Spring 2018 survey period, SREB partnered with Resonant Education, formerly known as My Student Survey, to administer the surveys to network high schools. Resonant Education conducted cognitive interviews and psychometric analyses of survey items to establish the construct validity of SREB's student survey, described in greater detail in *Study Design*. Resonant Education researchers also conducted some of the quantitative analyses of student survey results that appear in this report.

## Student Survey Participants

SREB's 2018 student survey was administered to 7,863 students in 103 schools in 15 states: Alabama, Arkansas, Georgia, Indiana, Kentucky, Missouri, New Mexico, New York, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Texas and Vermont. Seventeen percent of surveyed schools were located in urban areas, 57% in rural areas and 27% in suburban areas, according to their National Center for Education Statistics locale designation indicator. Fifty-one percent of respondents were female, 45% were male and 4% preferred not to disclose their gender. Forty-one percent of surveyed students were minority students and 59% were non-minority students. Student demographics were loosely representative of the overall population of American public schools, which lends a degree of generalizability to this study (NCES, 2015).

## Research Questions

Abundant data about achievement gaps and unequal access between various student groups can be found in state accountability records. In addition to these sources, SREB's student surveys offer a unique opportunity to investigate inequities in students' self-reported school and classroom experiences.

This study quantitatively analyzed 2018 student survey data to answer the following questions related to students' experiences of school and classroom practices that promote engagement and achievement:

- Is there greater within-school or between-school variation in students' school and classroom experiences? In other words, do survey responses differ more within a single school or between two different schools?
- Do the school and classroom experiences of high-performing students who meet college- and career-readiness benchmarks on national standardized tests differ from those who do not meet readiness benchmarks?
- Which student-level variables related to equity have the strongest explanatory power around students' school and classroom experiences?

## Study Design

This study took a three-fold approach to answering these three research questions. First, researchers at Resonant Education analyzed the results of the Spring 2018 high school student survey by calculating (a) the Cronbach's alpha and item-rest correlations of survey indices to determine scale reliability and validity and (b) the intraclass correlation coefficient to test for variation within the survey's grouping mechanism, the high school students attended. Second, SREB and Resonant Education researchers examined differences in school and classroom experiences between students identified as high performers and those who were not. Finally, we examined a set of variables that could be related to equity in education to determine which factors had a significant impact on students' overall reported school and classroom experiences.

Students' school and classroom experiences were collected through SREB's 2018 student survey, which was organized around nine Key Practices for high schools (see Appendix A). Specifically, we examined average index scores for each Key Practice between the two groups of students — high performers and "All Other" students — and any significant variation in responses to individual questions.

High performance was calculated using self-reported ACT and SAT scores from the student survey. Students were placed in the high-performing category if they reported that they had taken the ACT or SAT and had either a combination of an SAT Reading/Writing score of 480 or higher and an SAT Math score of 530 or higher or a combination of an ACT reading score of 22 or higher and an ACT math score of 22 or higher. Students were placed in the "All Other" category if they reported that they had taken the ACT or SAT but did not meet these benchmark scores. Students who reported that they had not taken either the ACT or SAT — 1,463 students — were not included in either category.

The final step of the study used a stepwise regression to identify variables related to equity that had the biggest impact on students' experiences. The full range of tested variables included the following:

- **Gender:** Student gender was represented by the categorical variable "Gender" — 1 for female, 2 for male.



- **Minority/non-minority status:** Race and ethnicity were represented through the categorical variable “MinorityStatus” — 0 for non-minority students (i.e., any white, non-Hispanic), 1 for minority students (all other races or ethnicities).
- **Socioeconomic status:** SES was represented by the proxy variable of mother’s highest education level (Buckles, 2017; Lien, Friestad & Klepp, 2001). This is an ordinal variable, “MothersEd,” that includes the range of potential exit education levels — did not graduate from high school, graduated from high school or got a GED, some education after high school, graduated from a four-year college and earned a graduate degree.
- **College and career readiness on standardized tests:** Readiness was represented by the “high performers” variable described above — 1 for students meeting benchmark scores, 0 for students not meeting benchmarks on nationally-recognized assessments of achievement.
- **Self-reported grades:** Students self-reported the grades that they received in most of their classes. This was represented through the ordinal variable “SelfReportedGrades,” with a range from 1 (“Ds and Fs”) to 7 (“Mostly As”).
- **Educational aspirations:** Students’ educational aspirations were represented by their responses to the level of education they hoped to achieve by age 30. This is the ordinal variable “EducationalAspirations,” which ranges from 1 (“Less than high school graduation”) to 6 (“Earn a graduate degree”).
- **Parental knowledge and support in student’s education:** This variable was represented by students’ responses to whether their parents were a good source of information about the education and training they would need to achieve their goals. This is the categorical variable “ParentalSupport” — 0 for no, 1 for yes.
- **Whether students took Algebra I in middle school:** This variable was represented by the categorical variable “AlgebraInMS” — 0 for no algebra taken in middle school, 1 for Algebra I completed in middle school.
- **Whether they will have enough credits to graduate by the end of their senior year:** This variable was represented by students’ responses to whether they would have enough credits to graduate by the end of their senior year. This is the categorical variable “GraduationCredits” — 0 for no, 1 for yes.

Resonant Education also examined the validity and reliability of the student surveys and SREB’s indicators of school and classroom practices that lead to student engagement and achievement — the Key Practices. Researchers conducted cognitive interviews with students at schools participating in SREB’s Making Schools Work network and examined results from the psychometric analyses of survey items and scales that were used in SREB’s surveys for high schools and technology centers.

Resonant Education undertook these interviews and psychometric analyses to establish construct validity — whether a scale measures the underlying construct or concept that it is intended to measure (Messick, 1989). For this study, Resonant Education sought to ensure that the survey items used in the surveys provide legitimate information about SREB’s Key Practices. They also sought to determine how much of the variation in survey responses can be explained by the school that students attend. As such, the construct they measured was the effective implementation of SREB’s Key Practices. Construct validity and scale reliability were measured using Cronbach’s alpha tests, which measure how interrelated survey items are within an index, and item-rest correlations, which measure how well each survey question fits with the other questions in the index. [See Appendix B for additional explanation of study methods.]

## Results

### Analyses of Survey Validity and Reliability

Resonant Education created a report examining the validity and reliability of SREB’s student surveys and indicators of school and classroom practice that lead to student engagement and achievement. Their initial report contained three primary findings:

1. Based on the results of the Cronbach’s alpha tests, the scales or indices for each Key Practice in the surveys were found to be measuring similar and distinct concepts.
2. Based on the results of the item-rest correlation test, items in the surveys were found to be measuring an overall common concept or construct. For this survey, the construct being measured was effective implementation of SREB’s Key Practices for high schools.
3. Based on the results of the intraclass correlation coefficient test, **responses to most survey items showed greater variation within a school than between separate schools.**

Of interest is the finding related to the intraclass correlation coefficient test. The ICC is a simple, direct measure of variation in survey responses and a good measure of the extent to which data are clustering around the grouping mechanism. For the high school surveys, grouping was at the school level, as this was our unit of analysis. The ICC therefore reflects *the extent to which differences in individual responses depend on the school students attend*. For example, an ICC of 0.5 means that the school a student attends accounts for 50% of the variability in survey responses. A high ICC score close to 1 suggests high similarities between responses from the same group (i.e., the school), while a low ICC score close to 0 means that responses from the same group are dissimilar (Resonant Education, 2018; Statistics How To, 2019).

Table 1 shows the average ICC score across all questions in each index, listed from lowest average score to the highest. Each index is aligned with primary constructs from SREB’s Key Practices — note that there is no single index per Key Practice, as some did not have enough survey questions to form an index. **None of the average index ICC scores in Table 1 comes close to 1, which suggests that most of the variation in responses is happening *within schools* instead of *between schools*.**

**Table 1. Intraclass Correlation Results of SREB’s Key Practice Indices, Showing Higher Variations Within Schools for Practices Related to Rich Classroom Learning Experiences**

Index	Average ICC Score	Variation
Project-Based Learning	0.028	Higher variation <i>within</i> a school
Powerful Mathematics Practices	0.033	
Powerful Literacy Practices	0.034	
Culture of High Expectations	0.036	
Redesigned Senior Year	0.043	
College and Career Counseling	0.045	
Extended Time and Personalized Supports	0.048	
Career-Related Experiences	0.053	Higher variation <i>between</i> schools

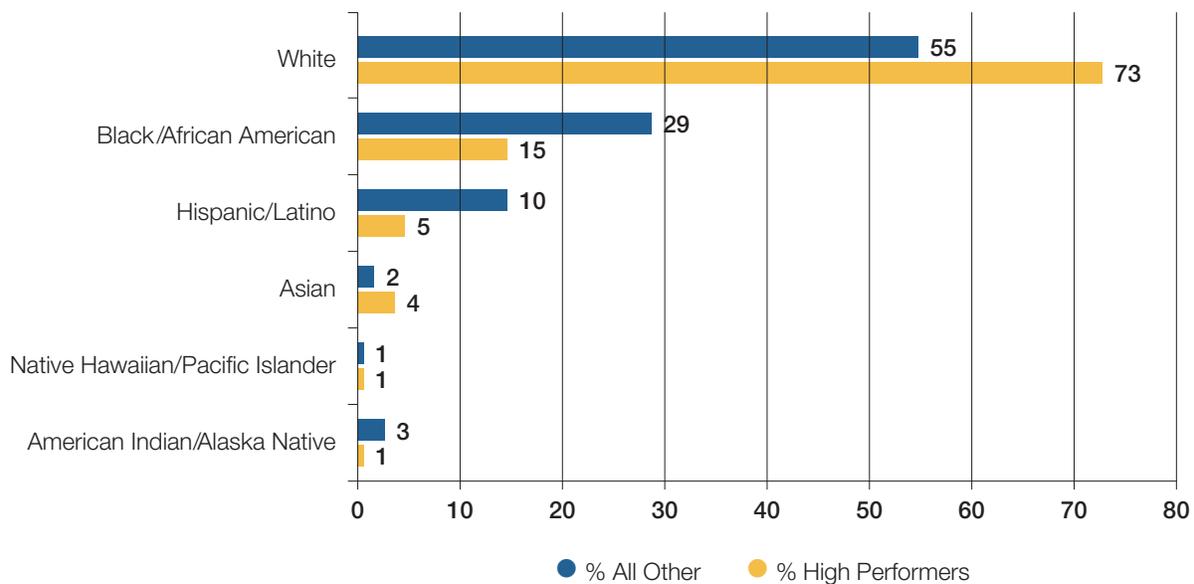
Source: Analyses of 2018 SREB student survey results.

**This finding — that variation in students’ experiences was higher within a school than between two separate schools — suggests that the school students attend has only a minimal influence on the variation in their school and classroom experiences.** Knowing this, we sought to understand what factors did contribute to variations in students’ experiences and opportunities in their school environment.

### Analyses of Student Survey Results

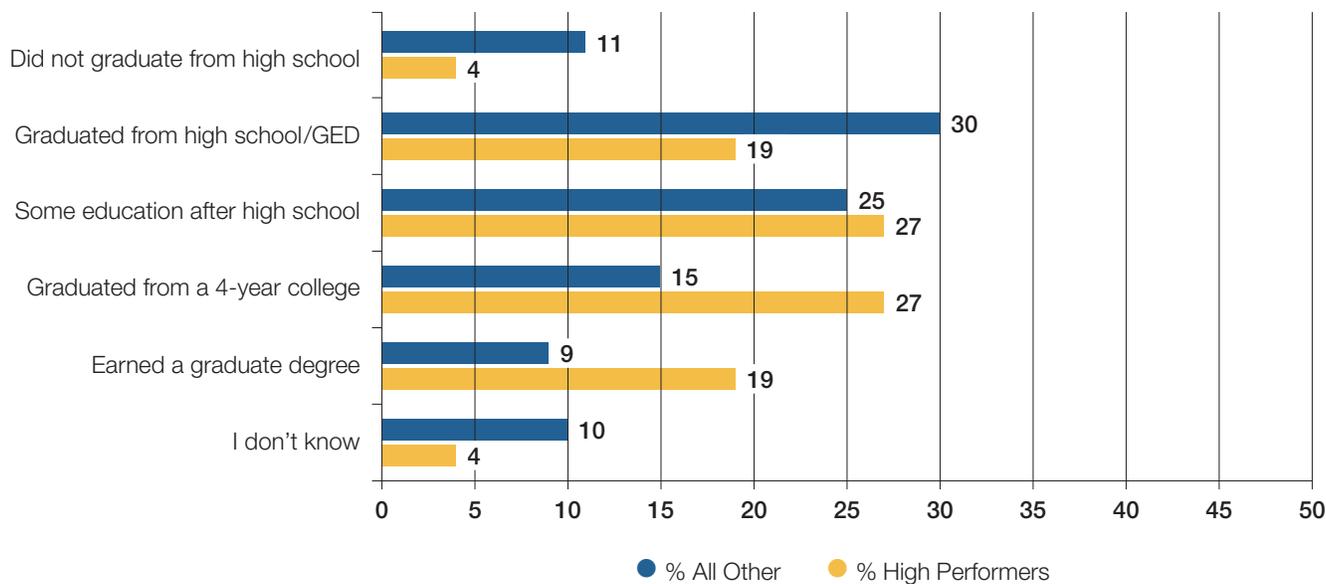
The population surveyed in Spring 2018 included 103 high schools and 7,863 students. Of the students who reported having taken either the ACT or SAT, 1,558 students (20%) met our criteria for high performance, while 5,719 students (73%) did not. Figures 1 and 2 offer demographic and socioeconomic characteristics of surveyed students. Mother’s level of educational attainment is used as a proxy variable for socioeconomic status (Buckles, 2017). Figure 1 shows that high-performing students included 26% minority students and 73% non-minority students. “All Other” students included 45% minority students and 55% non-minority students.

**Figure 1. Differences in surveyed students’ race/ethnicity demographics for high-performing and “All Other” students.**



Source: Analyses of 2018 SREB student survey results.

**Figure 2. Differences in high-performing and “All Other” students’ survey responses related to *Mother’s Highest Level of Education*, which was used as a proxy for socioeconomic status.**



Source: Analyses of 2018 SREB student survey results.

As Figure 2 shows, 73% of high-performing students reported that their mothers had some education after high school, in contrast to 49% for “All Other” students.

Findings suggest that the high-performing student group is primarily made up of non-minority students whose parents have higher levels of education and therefore a higher probable socioeconomic status. In contrast, the “All Other” group is represented by a higher proportion of minority students and students with a lower probable socioeconomic status. Demographic characteristics appear to be at least somewhat predictive of student achievement on national standardized tests.

**Table 2. Survey Index Scores Comparison**

Index	Average Index Score (Out of 5)	
	High Performers	All Others
Project-Based Learning	3.26	3.10
Powerful Mathematics Practices	3.48	3.26
Powerful Literacy Practices	3.71	3.45
Culture of High Expectations	3.19	3.01

Source: Analyses of 2018 SREB student survey results.

For every index across SREB’s student survey, student responses to Likert scale questions are tabulated to create an average score across all questions within that index. Table 2 compares index scores of high-performing students versus their peers on the four indices that showed greatest within-school variation. Across all indices, high-performing students had higher average index scores than their peers. The index with the largest gap between the two groups was SREB’s Powerful Literacy Practices. The difference between the two categories is statistically significant at the 95% confidence level ( $p = .003$ ).

The following survey questions had a minimum 10% difference in response rate between high performers and “All Other” students:

- Used industry-related technology or software on an assignment.
- Worked with a group to create a solution to a real-world problem.
- Created a solution to a real-world problem.
- I have to work on my assignments outside of school to complete them.
- I understand how the activities we do relate to what we are supposed to be learning.
- My teachers have me do written assignments that require me to use evidence from the texts to support what I write.
- I complete written assignments to show what I have learned.

- My teachers give me feedback on my writing.
- I learn skills that help me improve my writing.
- My teachers encourage me to share my opinions about the texts we read.
- My teachers ask questions that really make me think about the texts that we read.
- We discuss the texts we read with other students in pairs or small groups.
- I learn skills that help me read the texts (such as finding key words, summarizing, annotating, etc.)
- I learn how to find evidence for my writing assignments within the texts we read.
- My math teachers ask tough questions in class that make me really think about the information we are learning.
- I solve math problems that require using more than one math concept to solve.
- The assignments I do in my math classes are challenging.

The majority of these questions fell within the indices for SREB’s Powerful Literacy Practices and Powerful Mathematics Practices. For literacy, gaps between high-performing students and the “All Other” group were highest on questions about using evidence in student writing, teachers providing feedback, teachers encouraging students to share their opinions about texts and students completing written assignments to show what they have learned. See Appendix C for SREB’s Powerful Literacy Practices index.

Question responses related to SREB’s Powerful Mathematics Practices with the biggest gaps between groups were related to students feeling challenged by their math assignments, being encouraged to understand concepts instead of simply memorizing rules and procedures, and being assigned tasks or assignments that require multiple concepts to solve. See Appendix C for SREB’s Powerful Mathematics Practices index.

We created a series of linear regression models to measure the effect of various equity-related components on students’ experiences in the form of an increased overall survey score. This series included eight stepwise models that included students’ demographic characteristics and students’ academic background. The full stepwise regression can be found in Appendix D.

**Table 3. Significant Predictors of Students’ School and Classroom Experiences by Overall Survey Score (Max Overall Score = 80)**

Independent Variable	Expected Increase in Overall Score Per Unit Increase in Independent Variable	Statistical Significance
Enough Credits to Graduate	3.1	< .001
Parental Support	2.5	< .001
Post-High School Educational Plans	0.6	< .001
Educational Aspirations	0.5	< .001
Advanced Placement or International Baccalaureate Credits	0.1	.020
Students’ Self-Reported Grades	0.2	.002
Socioeconomic Status	– 0.3	< .001
Algebra I Taken in Middle School	0.5	.006
Postsecondary Credit Attainment	0.1	.045

Source: Analyses of 2018 SREB student survey results.

The final model in the regression analyses produced an  $R^2$  of .249, indicating that 25% of a student’s overall survey score could be explained by the factors measured in this model. All variables listed above were statistically significant at the 95% confidence interval.

**As shown in Table 3, two primary factors account for a considerable amount of variation in the overall survey score – students having enough credits to graduate at the end of their senior year and students having parents who were informed and supportive of their educational and career goals.** Students having higher educational aspirations and postsecondary education plans for after high school and taking Algebra I in middle school were also variables that were likely to increase students’ overall survey scores, though to a lesser degree. It is important to remember that the overall survey score is representative of what is happening for students in their school or classroom, as the score is tallied based on the self-reported responses of students to questions about their experiences at school; a higher score means they report more positive experiences. As such, variation in the overall score represents variation in students’ experiences.

Students who reported they would have enough credits to graduate at the end of the year could be expected to have a 3-point higher overall survey score than peers who were not expecting to graduate. Similarly, students who reported that their parents were good sources of information and support related to their academic and career goals were likely to have a 2.5-point increase in their score.

Surprisingly, although variables around students' demographic characteristics were correlated with whether or not students were meeting benchmarks on national tests, and thus were "high performers," these variables did not prove to be statistically significant in the final model in relation to students' school and classroom experiences — except for the socioeconomic status proxy variable, which had a negative impact on overall score. Gender and minority status were not significant factors.

The high performance variable — measuring whether or not students met college- and career-readiness benchmarks on the ACT or SAT — was also not statistically significant in the final model, which would explain why the gap between high performers and "All Other" students' index scores was noticeable but not large.

Overall, other variables besides standardized test scores but related to students' academic background and even their home life had greater explanatory power over their school and classroom experiences. Students who were given good advice and support from their parents and who demonstrated agency and self-determination in navigating their options through high school were more likely to report positive school and classroom experiences.

## Discussion

Based on these findings, we drew the following conclusions:

- Variations in surveyed students' perceptions of their school and classroom experiences **was much higher *within* schools than between schools.**
- The large majority of students who fell into the high-performing category were both non-minorities and had a higher assumed socioeconomic status, **while the percentage of minority and low socioeconomic status students was much higher in the "All Other" students category.**
- The average index score across all indices in SREB's 2018 student survey was **higher for high-performing students than it was for "All Other" students.**
- For every question but one included in the four indices that were closely examined, **high-performing students reported a higher percentage of positive school and classroom experiences than their peers.** On average, approximately 8% more high-performing students reported the highest levels of school experiences than the "All Other" group.

This raises a "chicken or the egg" question: Do students who experience positive school and classroom practices go on to score higher on standardized tests because of these practices, or do they experience more positive school and classroom practices than their peers because they are high-performing students? **Nevertheless, while the percentage difference between the two groups is noteworthy, it is small enough to indicate that being a high-performing student is not the sole determinant of one's experiences within a school.**

- **Positive school and classroom experiences, represented by a high overall score on SREB's student survey, were statistically significantly impacted by students' educational background and home life.** Students who were on track to graduate, had well-informed and supportive parents, and had postsecondary education plans reported more positive experiences than their counterparts. Socioeconomic status had a negative correlation with students' school experiences — an unexpected finding. This could be due to the use of mother's highest level of education as a proxy for socioeconomic status, a topic that deserves attention in future studies. Readiness on standardized tests for high-performing students was not statistically significant. Minority status was also not statistically significant. Overall, variables related to the social capital and agency of students and their families were bigger determinants of their school and classroom experiences than their demographic characteristics.

## Recommendations

Leveling the playing field to provide enriching school and classroom experiences for all students is no simple task, but it *is* possible. How do schools combat obstacles like a history of low performance, being located in a poverty-stricken or high-crime setting, low parental engagement, issues with implicit bias toward minority students, behavioral problems or a highly transient student population?

SREB has found that best practices for success in schools with challenging characteristics are to:

- **Cultivate a culture of high expectations for all students, not just the highest performing students.** School leaders and teachers focus less on the obstacles facing their school and students, and more on the belief that students are capable of meeting high expectations with encouragement and support. Leaders encourage a culture in which all students are expected to meet college- and career-readiness standards and either continue their postsecondary education or enter the workforce in a high-skill,

Students who were given good advice and support from their parents and who demonstrated agency and self-determination in navigating their options through high school were more likely to report positive school and classroom experiences.

high-wage, high-demand field (Chenoweth, 2007; SREB, 2017). In a culture of high expectations, students are encouraged to try and retry until they master concepts, with teachers providing feedback and creating multiple opportunities for improvement through formative assessments (Blankstein, 2013; Reeves, 2003).

Schools that provide equitable opportunities for students do not ignore how bias manifests itself in schools — instead, they actively unpack the issue to recognize and respond accordingly through anti-bias education.

- **Examine bias in schools and classrooms and provide educators with training to combat it.** By asking questions related to challenging assignments, expectations, work-based learning, student supports and other indicators of quality learning experiences, SREB's student surveys probe whether schools may be setting a low bar for achievement and perhaps allowing biased thinking about students' capacity to affect their overall school climate. Schools that provide equitable opportunities for students do not ignore how bias manifests itself in schools — instead, they actively unpack the issue to recognize and respond accordingly through anti-bias education. Regardless of whether bias issues are dependent on race, poverty or prior academic achievement, teachers and school leaders recognize that bias negatively affects student-teacher interactions, course placement and overall student performance. Teachers understand that a one-size-fits all approach will not work for all students and make an active effort to differentiate and scaffold their instruction to meet students' needs. For students with difficult home environments who are school-dependent, school leaders and teachers work to first meet students' basic needs to clear the way for learning and continually encourage diversity and inclusion activities for students and their families (Budge & Parrett, 2018; Waterford.org, 2019).
- **Personalize the school through family and community involvement in academic and career counseling and a teacher-adviser system.** Teachers and school counselors connect with students and parents and create opportunities for students to explore and understand their interests and aptitudes and set postsecondary and career goals. Personalization and one-on-one student-staff interactions keep students from getting lost in the crowd. Such interactions re-emphasize the high expectations held for each student (Chenoweth, 2007; SREB, 2017; Yamamura, Martinez, & Saenz, 2010).
- **Build strong academic and career advisement and guidance programs that focus on what the school *can* do as opposed to what families at home cannot.** Successful schools recognize that while home life and personal characteristics do affect students' academic trajectories, school-based systems and structures of support can work to bridge the gap for students with lower prior achievement and less parental support and understanding of their educational and career goals. All students receive personalized guidance around a broad range of postsecondary and career options, and counselors and teacher-advisers work with students to understand what they need to do in high school to reach their goals. Structured work-based learning programs expose students to career possibilities and help them understand the training and skills needed in their desired careers. The whole school community provides social and emotional supports and encouragement for students (SREB, 2017).
- **Closely track achievement and other student data and set annual incremental goals based on these data.** School leaders prioritize a crucial component of cultivating a culture of continuous improvement — the ongoing use of data (Armstrong & Anthes, 2001). Student data is used to monitor and evaluate progress, measure outcomes and set goals for improving achievement and readiness for all students (SREB, 2017; Trujillo, 2013). Data is not only evaluated at the aggregate level, but also closely examined at the subgroup level to detect negative trends and identify students showing early warning signs of struggle. Leaders encourage schoolwide ownership of improvement efforts for all students by displaying charts, graphs and tables of achievement around the school and showcasing results (Reeves, 2003).
- **Increase access to higher-level courses and offer more Advanced Placement, International Baccalaureate, honors and college-level course options to students.** Caps on AP, IB, honors and college-level courses should be eliminated, giving all students the opportunity to rise to a challenge. This effort starts with the school's academic guidance department, but ultimately is a schoolwide effort to encourage all students to complete an intellectually demanding career pathway program of study (SREB, 2017).
- **Use career pathway programs of study to attract underrepresented and nontraditional students to challenging courses.** Career pathways align three settings for student learning — secondary, postsecondary and the workplace. This alignment not only helps students understand what is required academically for them to meet their career goals but can also shorten the time it takes — and lower the cost — to earn industry or postsecondary credentials. In many cases, career pathway programs make it possible for students to earn these credentials before they graduate from high school. Rigorous career pathway courses typically feature project-based curricula, which spark student interest and engagement by challenging them to apply academic knowledge and skills to solve real-world problems (Winkler & Warren, 2019).
- **Provide intervention programs and emphasize no-failure policies.** Specialized literacy and math readiness courses are offered to help eighth- and ninth-grade students who do not meet readiness benchmarks for high school and seniors who do not meet readiness benchmarks for postsecondary studies. Coupled with a schoolwide culture that encourages reteaching and extra time and support for students who need it, readiness courses (or comparable courses) can close skill gaps and boost students' readiness, regardless of their prior academic achievement (Bottoms & Squires, 2016).

## What Happens When Districts and Schools Don't Adequately Address Equity?

Identifying inequities is an important first step toward closing them. A second step is recommending a course of action to address them. We also believe it's important to consider the consequences of *not* adequately addressing inequities in students' school and classroom experiences.

To understand the potential consequences of inaction, we asked individuals who work daily with districts and schools to share examples of what perpetuated inequities look like. Here's a sampling of what they told us.

- **Magnet public schools with innovative themes, programs or structures entice students and their families to attend with other “top” students — but may also promote a phenomenon known as “creaming.”** Creaming occurs when academically strong students and highly effective teachers are “creamed off the top” to attend these magnets and leave their sending schools behind. This often means that sending schools have lower student enrollments, fewer resources and more limited special programs — as well as a larger number of struggling students and inexperienced teachers. Such schools may set lower expectations for their remaining students or resort to remediation rather than using differentiation and scaffolding to support challenging instruction. In such contexts, students may fall even further behind academically. And without ongoing professional development and coaching support, teachers may not know how to engage students who struggle academically.
- **When tracking practices lead to eighth-graders being assigned to “regular” math classes rather than Algebra I, students receive the message that they're “not smart enough” and that their teachers hold low expectations of them.** Algebra I is a gateway course for higher level math and access to postsecondary education. Similarly, when students read below grade level and are assigned to low-level English language arts classes, they may not receive the personalized instructional supports, scaffolding and rich literacy-based assignments they need to improve their reading, writing and communication skills. Students who read below grade level are much less likely to take and pass college entrance exams and enroll and persist in postsecondary programs.
- **Students in high-level, challenging classes experience varied technological and instructional resources that their peers in lower level, “regular” courses do not.** Students in high-level classes benefit from small group instruction and project-based learning and have access to amenities like field trips, deluxe science labs and the latest software, equipment and educational technologies. Students in lower level classes not only lack access to such resources, but their teachers may also believe that they aren't able to handle working in small groups or going on field trips. Student learning and success is dependent on frequent exposure to rich educational opportunities in diverse settings. Such experiences can also serve as avenues for students to find their true passion.
- **High-achieving students have greater access to learning experiences inside and outside the school.** School guidance counselors play a critical role in determining whether all students have equitable opportunities to choose challenging secondary courses, pursue scholarships, engage in work-based learning and participate in summer enrichment programs. If guidance activities are largely dedicated to serving traditionally “college-going” students, students who may be seeking post-graduation employment opportunities or military service are left to figure things out on their own.

What works in achieving equity for all students? Canned programs are certainly not the answer. Districts and schools that effectively address equity and access for each student gain educator buy-in at every level. Leaders and teachers foster real discussions with their sending schools about how to address students' academic strengths and weaknesses. Student deficiencies in literacy and math are addressed early. Schools offer academic activities that every student is expected to participate in — such as cultivating a school garden or greenhouse, completing a capstone project and taking class trips. Every high school student has an adult advocate who encourages and supports them in planning for college and careers. Academic interventions prepare struggling students for higher level courses — courses that are open to all.

We believe the recommendations made in this report can help districts and schools ensure success for all.

## Limitations and Potential for Future Research

This study can also serve as a starting point for additional analyses related to student factors that are closely linked with college and career readiness. SREB is fortunate to have an ongoing mechanism for collecting data on students' perceptions of their educational experiences at Making Schools Work network schools, which we plan to put to further use in later studies. Due to certain limitations in data quality and reporting from SREB's Spring 2018 student surveys, a future study should include the following components:

- A broader definition of high performance that captures additional indicators, like placement in nonremedial postsecondary courses, postsecondary credit and credential attainment, and a history of taking rigorous courses.
- A stronger index of questions representing socioeconomic status instead of a proxy variable for SES. This could include the number of education-related items in the home — such as books, a computer, desk or dictionary — and the highest level of parental educational attainment for the student's mother and father (Broer, Bai & Fonseca, 2019).
- A more effective method of collecting student achievement results that does not require students to self-report, as this method leaves some room for error.
- A controlled variable study to limit the potential influence of outside variables.



## Closing Remarks

We recognize that student perception data is not always easy to come by. While quantitative data like student assessment scores and state report card data can give us a general understanding of student achievement in a school, such data shed very little light on what students are actually experiencing in the classroom, nor on differences in experiences for students from diverse backgrounds. SREB's student surveys allow us to connect student outcomes with the experiences students have in school.

At first glance, this study's results may seem disheartening — higher performing students often report having better experiences at school, and students' home life and prior academic achievement affect the learning opportunities, types of instruction and overall support and encouragement they receive in school. We believe these results represent a critical opportunity for self-reflection and improvement. We also encourage school and district leaders to ask themselves whether similar gaps may be present in their schools. If they are, how can their schools provide systems and structures that promote quality learning experiences, alleviate the effects of individual student factors on students' experiences at school and seek to level the playing field for each student?

The recommendations made in this report are not all-encompassing and will take time and effort to implement. Nevertheless, they represent a positive step toward ensuring that all students have the school and classroom supports they need to reach for and achieve their goals.

## References

- Armstrong, J., & Anthes, K. (2001). How data can help: Putting information to work to raise student achievement. *American School Board Journal*, 188(11), 38-41.
- Blankstein, A. (2013). *Failure is not an option: 6 principles that advance student achievement in highly effective schools*. Thousand Oaks, CA: Corwin.
- Bottoms, G., & Sundell, K. (2017). *Valuing both Cs in college- and career-readiness accountability systems*. Atlanta, GA: Southern Regional Education Board.
- Bottoms, G., & Squires, J. (2016). *Readiness courses: Preparing students for college and careers*. Atlanta, GA: SREB.
- Broer, M., Bai, Y., & Fonseca, F. (2019). *Socioeconomic inequality and educational outcomes. Evidence from twenty years of TIMSS*. Amsterdam, the Netherlands: IEA Research for Education.
- Buckles, K. (2017). *Maternal socio-economic status and the well-being of the next generation(s)* (IZA Discussion Paper No. 10714). Bonn, Germany: IZA Institute of Labor Economics. Retrieved from <http://ftp.iza.org/dp10714.pdf>
- Budge, K., & Parrett, W. (2018). *Disrupting poverty: Five powerful classroom practices*. Alexandria, VA: ASCD.
- Chenoweth, K. (2007). *It's being done: Academic success in unexpected schools*. Cambridge, MA: Harvard Education Press.
- Davis, E., Stephan, J., Lindsay, J., & Park, S. (2015). *Who will succeed and who will struggle? Predicting early college success with Indiana's student information system* (REL 2015-078). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Midwest. Retrieved from <https://ies.ed.gov/ncee/edlabs/projects/project.asp?ProjectID=354>.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York, NY: Routledge.
- Hein, V., Smerdon, B., & Sambolt, M. (2013). *Predictors of postsecondary success*. Washington, DC: College and Career Readiness and Success Center, American Institutes for Research. Retrieved from <https://files.eric.ed.gov/fulltext/ED555671.pdf>
- Hyslop, A. (2018). *Perkins V: The official guide to the Strengthening Career and Technical Education for the 21st Century Act*. Alexandria, VA: Association for Career and Technical Education.
- Kim, J., & Sunderman, G. (2005). Measuring academic proficiency under the No Child Left behind Act: Implications for educational equity. *Educational Researcher*, 34(8), 3-13. Retrieved from <http://www.jstor.org/stable/3699961>
- King, J. (2016). *2013-2014 Civil Rights data collection: A first look*. Washington, DC: U.S. Department of Education, Office for Civil Rights. Retrieved from <https://www2.ed.gov/about/offices/list/ocr/docs/2013-14-first-look.pdf>
- Konstantopolous, S. (2005). *Trends of school effects on student achievement: Evidence from NLS:72, HSB:82, and NELLS:92* (No. 1749). Bonn, Germany: Institute for the Study of Labor.
- Lien N., Friestad, C., & Klepp K. (2001). Adolescents' proxy reports of parents' socioeconomic status: How valid are they? *Journal of Epidemiology & Community Health*, 55, 731-737. Retrieved from <https://jech.bmj.com/content/55/10/731>
- Mattern, K. D., Shaw, E. J., & Marini, J. (2013). *Does college readiness translate to college completion?* (College Board Research Report). Iowa City, IA: College Board. Retrieved from <https://files.eric.ed.gov/fulltext/ED562613.pdf>
- Messick, S. (1989). Meaning and values in test validation: The science and ethics of assessment. *Educational Researcher*, 18(2), 5-11. Retrieved from <https://doi.org/10.3102/0013189X018002005>
- Mishkind, A. (2014). *Overview: State definitions of college and career readiness*. Washington, DC: College and Career Readiness and Success Center, American Institutes for Research. Retrieved from <https://eric.ed.gov/?id=ED555670>
- National Center for Education Statistics. (2015). *Percentage distribution of enrollment in public elementary and secondary schools, by race/ethnicity and state or jurisdiction: Fall 2000 and fall 2016*. Washington, DC: U.S. Department of Education, Institute of Education Sciences. Retrieved from [https://nces.ed.gov/programs/digest/d18/tables/dt18\\_203.70.asp](https://nces.ed.gov/programs/digest/d18/tables/dt18_203.70.asp)
- Oakes, J. (1985). *Keeping track: How schools structure inequality*. New Haven, CT: Yale University Press. Retrieved from <https://eric.ed.gov/?id=ED274749>.

## References (continued)

- Oakes, J., & Guiton, G. (1995). Matchmaking: The dynamics of high school tracking decisions. *American Educational Research Journal*, 32(1), 3-33. Retrieved from <https://eric.ed.gov/?id=EJ504315>.
- Perkins Collaborative Research Network. (2019a). *Every Student Succeeds Act (ESSA)*. Washington, DC: Office of Career, Technical and Adult Education, U.S. Department of Education. Retrieved from <https://cte.ed.gov/legislation/about-essa>
- Perkins Collaborative Research Network. (2019b). *Perkins V*. Washington, DC: Office of Career, Technical and Adult Education, U.S. Department of Education. Retrieved from <https://cte.ed.gov/legislation/perkins-v>
- Reardon, S., Greenberg, E., Kalogrides, D., Shores, K., & Valentino, R. (2013). *Left behind? The effect of No Child Left Behind on academic achievement gaps*. Stanford, CA: Stanford University. Retrieved from <https://cepa.stanford.edu/content/left-behind-effect-no-child-left-behind-academic-achievement-gaps>
- Reeves, D. (2003). *High performance in high poverty schools: 90/90/90 and beyond*. Swampscott, MA: Center for Performance Assessment. Retrieved from [http://swmcdn.com/site\\_0242/TollesonWestview\\_ScheduleDialoghighperformancehighpovertyschools\\_111913.pdf](http://swmcdn.com/site_0242/TollesonWestview_ScheduleDialoghighperformancehighpovertyschools_111913.pdf)
- Resonant Education. (2018). *Southern Regional Education Board High Schools That Work and Technology Centers That Work survey analysis: Spring 2018 administration*. Nashville, TN: Author.
- Solorzano, D. G., & Ornelas, A. (2002). A critical race analysis of Advanced Placement classes: A case of educational inequality. *Journal of Latinos and Education*, 1(4), 215-29. Retrieved from <https://eric.ed.gov/?id=EJ654445>.
- Southern Regional Education Board. (2017). *Connecting classrooms, careers and college*. Atlanta, GA: Author.
- Southern Regional Education Board. (2019, June). *Strategic plan 2019-2024*. Atlanta, GA: Author. Retrieved from [https://www.sreb.org/sites/main/files/file-attachments/2019\\_strategic\\_plan.pdf](https://www.sreb.org/sites/main/files/file-attachments/2019_strategic_plan.pdf)
- Statistics How To. (2016). *Intraclass correlation*. Jacksonville, FL: Author. Retrieved from <https://www.statisticshowto.datasciencecentral.com/intraclass-correlation/>
- Trujillo, T. (2013) The reincarnation of the effective schools research: Rethinking the literature on district effectiveness. *Journal of Educational Administration*, 51(4), 426-452. <https://doi.org/10.1108/09578231311325640>
- U.S. Department of Education, Office for Civil Rights. (2014). *Civil rights data collection data snapshot: College and career readiness*. Washington, DC: Author. Retrieved from <https://ocrdata.ed.gov/Downloads/CRDC-College-and-Career-Readiness-Snapshot.pdf>
- Waterford.org. (2019). *Why understanding equity vs. equality in schools can help you create an inclusive classroom*. Sandy, UT: Author. Retrieved from <https://www.waterford.org/education/equity-vs-equality-in-education/>
- Winkler, D., & Warren, S. (2019). *Increasing access & equity: A whole school approach. Techniques*, 94(3). Retrieved from <https://www.sreb.org/publication/increasing-access-equity-whole-school-approach>
- World Health Organization. (2019). *Health systems — equity*. Geneva, Switzerland: Author. Retrieved from <https://www.who.int/healthsystems/topics/equity/en/>
- Yamamura, E., Martinez, M., & Saenz, V. (2010). Moving beyond high school expectations: Examining stakeholders' responsibility for increasing Latina/o students' college readiness. *The High School Journal*, 93(3), 126-148. Retrieved from <http://www.jstor.org/stable/40864930>

## Appendix A — SREB’s Key Practices for High Schools

The nine Key Practices of SREB’s Making Schools Work school improvement process were designed to help schools offer accelerated learning opportunities that help students master foundational academic, technical and employability skills. SREB’s 2018 student and teacher surveys asked questions that gauge how well schools are implementing each of the Key Practices below.

1. Schools provide students with access to intellectually demanding career pathway programs of study that:
  - Connect at least four pathway courses with a college-ready core of English, math, science and social studies courses. All students complete four years of math courses tailored to their career goals. Students pursuing credentials and degrees in STEM (science, technology, engineering and math) fields take Algebra II and higher math. Students pursuing credentials and degrees in non-STEM fields take Algebra I, geometry and two career-related math courses.
  - Include four or more career pathway courses in which a high percentage of students report completing rigorous assignments, like Advanced Career courses. Alternatively, students may complete three Advanced Placement courses in STEM or the humanities or three International Baccalaureate career diploma courses.
  - Connect three stages of learning — high school, postsecondary education and the workplace — through a redesigned senior year that includes dual enrollment courses and work-based learning opportunities.
  - Connect to high-skill, high-wage, high-demand jobs that help students secure a middle-class life.
  - Organize high school curricula around career academies that provide common planning time for academic and career pathway teachers to co-plan instruction, assignments and connected learning experiences for students.
  - Connect grade-level readiness standards with rigorous instruction and assignments in career pathway courses.
2. Schools provide teachers with the ongoing professional development they need to help students master the literacy (reading, writing and oral communication) and math skills that promote success in postsecondary education and the workplace.
3. Schools extend learning time and provide personalized supports to students who need help mastering foundational academic, technical, technological, cognitive and workplace skills.
4. Schools offer specialized literacy and math readiness courses to eighth- and ninth-graders who do not meet readiness benchmarks for high school and to seniors who do not meet readiness benchmarks for postsecondary certificate, credential and degree programs or entry-level jobs in high-skill, high-wage career fields.
5. Career pathway teachers draw on real-world problems to create project-based assignments that:
  - Incorporate grade-level college- and career-readiness standards in literacy, math and science.
  - Feature the use of technology, such as coding or learning new software.
  - Encourage students to work both independently and as part of a team.
6. With the support of caring employers and community partners, students participate in a series of structured work-based learning experiences — like worksite tours, job shadows, internships and capstone projects — that help them make the connection between their academic and technical studies and the world of work. Employers and schools co-develop work-based learning plans.
7. Teachers and counselors deliver academic and career counseling and exploratory experiences that help students and parents achieve a deeper understanding of their interests, aptitudes and opportunities and set postsecondary and career goals. Teachers and counselors work with students and parents to develop personalized programs of study that prepare students for a double purpose — college and careers. These plans span high school and at least the first year of postsecondary studies, if not more.
8. During a redesigned senior year, eligible students can earn up to 30 college credits by pursuing an early college program, an early advanced credential program or both. Struggling students take readiness courses that help them master literacy and math skills.
9. Schools cultivate a culture of continuous improvement in which teachers and leaders share the goal of helping at least 80% of students graduate college ready, career ready or both — with 60% of graduates earning a credential or degree of value by age 25.

### The New Key Practices

The nine Key Practices listed above were updated after the Spring 2018 survey administration. The new 10 Key Practices for high schools were approved by SREB’s Making Schools Work Advisory Council in Spring 2019 and are listed in brief below.

1. Create a **culture of high expectations** in every classroom and throughout the school.
2. Ensure each student develops and completes a **personalized program of study** that leads to postsecondary and career success.

## Appendix A — SREB’s Key Practices for High Schools (continued)

3. Teach academic content through the lens of **real-world problems and projects**.
4. Ensure that all students, including underrepresented and nontraditional students, have **access to high-quality career pathways**.
5. Use research-based instructional strategies and innovative technology practices to **engage each student**.
6. Provide **teams of teachers with training, time and support** to work together to improve instruction.
7. Provide each student with a continuum of **real-world learning experiences** that connect classroom and workplace learning.
8. Offer **guidance and advisement** that empowers students to pursue a full range of career and college options after high school.
9. Provide students with the **extra help or accelerated learning strategies** they need to graduate college and career ready.
10. Engage the whole school community in **continuously using data** to identify problems and develop plans to solve them.

## Appendix B — Quantitative Analysis Results

The tables below present intraclass correlation coefficient test results for all survey questions. The ICC is a measure of how common responses are within groups of students, and thus how well the item distinguishes between groups. For these surveys, we grouped at the school level, so the ICC reflects the extent to which differences in students' individual responses depend on the high school that students attend. When dealing with human subjects, an ICC value of 0.1 – 0.2 suggests that clustering around the grouping mechanism (i.e., their high school) is high. A lower ICC score indicates that the variation is occurring within schools rather than between schools.

The green shading of values in Table B1 corresponds with how large the ICC value is — lighter shading indicates lower values and darker shading indicates higher values.

**Table B1. Intraclass Correlation Coefficient Test Results for All Student Survey Questions**

Key Practice	2018 SREB Student Survey Questions		Intraclass Correlation Coefficient (ICC)
Powerful Literacy Strategies	1.1	I understand how the activities we do relate to what we are supposed to be learning.	0.03
	1.2	I learn skills that help me read the texts.	0.03
	1.3	We discuss the texts we read with other students in pairs or small groups.	0.03
	1.4	I learn skills for each subject that help me read the texts for that class.	0.02
	1.5	My teachers ask questions that really make me think about the texts that we read.	0.03
	1.6	My teachers encourage me to share my opinions about the texts we read.	0.03
	1.7	I learn skills that help me improve my writing.	0.04
	1.8	My teachers give me feedback on my writing.	0.06
	1.9	I learn how to organize my thoughts about what I want to say before starting a writing assignment.	0.03
	1.10	I learn how to edit my writing.	0.03
	1.11	I complete written assignments to show what I have learned.	0.03
	1.12	My teachers have me do written assignments that require me to use evidence from the texts to support what I write.	0.04
	1.13	My teachers have me do assignments using research from more than one text.	0.04
	1.14	I learn how to find evidence for my writing assignments within the texts we read.	0.03
Powerful Mathematics Strategies	2.1	My math teachers give me feedback on my assignments that helps me understand why I got an answer wrong.	0.03
	2.2	My math teachers give me feedback on my work that helps me improve at math.	0.03
	2.3	My math teachers ask tough questions in class that make me really think about the information we are learning.	0.03
	2.4	If I do not understand a concept in my math classes, my teachers work with me until I understand.	0.04
	2.5	If I have misunderstandings on an assignment, my teacher helps me relearn the material with a new assignment.	0.03
	2.6	If I miss questions on a test or quiz, my teacher gives me extra practice problems for the concepts that I missed.	0.05
	2.7	During math class, students learn from each other by discussing different ways to solve a problem.	0.03
	2.8	My math teachers encourage me to understand math concepts instead of just memorizing rules and procedures.	0.04
	2.9	My math teachers have me apply math to situations in the real world.	0.03
	2.10	My math teachers encourage me to think about more than one way to solve a math problem before I choose my strategy.	0.03
	2.11	When we solve problems, my math teachers ask me to explain how I chose my method of solving the problem.	0.03
	2.12	The assignments I do in my math classes are challenging.	0.03
	2.13	I solve math problems that require using more than one math concept to solve.	0.03

Source: Analyses of 2018 SREB student survey results.

● 0.00 – 0.03   ● 0.04 – 0.07   ● 0.08 – 0.11   ● 0.12 – 0.15   ● 0.16 – 0.18

## Appendix B — Quantitative Analysis Results (continued)

Table B1. Intraclass Correlation Coefficient Test Results for All Student Survey Questions

Key Practice	2018 SREB Student Survey Questions		Intraclass Correlation Coefficient (ICC)
Project-Based and Rigorous Assignments	3.1	My assignments require me to use information from more than one of my classes.	0.03
	3.2	The assignments in my classes really make me think hard.	0.03
	3.3	The assignments in my classes are challenging.	0.03
	3.4	I have to work on my assignments outside of school to complete them.	0.03
	3.5	I can complete my assignments even if I don't really understand what we are learning about.	0.01
	3.6	To do well on my assignments, I have to really understand what we are learning about.	0.02
	3.7	Created a solution to a real-world problem.	0.02
	3.8	Done background research to develop a plan for design.	0.03
	3.9	Worked with a group to create a solution to a real-world problem.	0.03
	3.10	Had assignments that required me to test out my solution to a real-world problem.	0.03
	3.11	Presented my solution to experts within the industry.	0.04
	3.12	Used industry related technology or software on an assignment.	0.03
	3.13	Made a written record of my work.	0.03
	3.14	Used math to complete an assignment.	0.02
	3.15	When I haven't done well on an assignment in my career pathway classes, I had the opportunity to redo it.	0.04
Extended Learning Time and Personalized Support	4.1	If I do not do well on an assignment, my teachers help me relearn the material with a new assignment.	0.04
	4.2	If I have already learned something we are doing in class, my teacher has a different assignment for me to work on.	0.05
	4.3	If I do not understand something in class, my teachers explain it a different way to help me understand.	0.03
	4.4	My teachers give me feedback on my assignments that helps me understand what I need to do better.	0.03
	4.5	My teachers help me learn from my mistakes on my assignments.	0.03
	4.6	My teachers use tests to identify skills that I still need to master.	0.03
	4.7	I have time in class to improve skills that I still need to master.	0.03
	4.8	I have a chance to redo assignments that I do poorly on.	0.07
	4.9	Tutoring is available.	0.06
	4.10	My teachers notice if a student is not doing well in class.	0.02
	4.11	My teachers are available to help with assignments.	0.03
	4.12	Our school lets parents know if students are not doing well in their classes.	0.02
	4.13	My school offers online classes for students that need to retake a class.	0.18
Meaningful and Structured Career-Related Experiences	5.1	Did your school have guest speakers talk about various careers?	0.03
	5.2	Did your school have a career fair?	0.12
	5.3	Did your school provide information to you about jobs and careers that will be in high demand?	0.04
	5.4	Did you speak with someone at your school about a career you are interested in?	0.03
	5.5	Did you receive information from your school about internships or other work-based opportunities?	0.06
	5.6	Did you participate in job shadowing?	0.10

Source: Analyses of 2018 SREB student survey results.

● 0.00 – 0.03   ● 0.04 – 0.07   ● 0.08 – 0.11   ● 0.12 – 0.15   ● 0.16 – 0.18

## Appendix B — Quantitative Analysis Results (continued)

Table B1. Intraclass Correlation Coefficient Test Results for All Student Survey Questions

Key Practice	2018 SREB Student Survey Questions		Intraclass Correlation Coefficient (ICC)
Meaningful and Structured Career-Related Experiences	5.7	Did you visit someone at their workplace for a career that you are interested in?	0.05
	5.8	Did you participate in a worksite tour?	0.03
	5.9	Did you do an internship that was organized by the school?	0.05
	5.10	Did your school organize an opportunity to work regularly with someone in a career you are interested in?	0.04
	5.11	Did you do a presentation for your school on your experiences during your internship or work opportunity?	0.04
	5.12	Did you do a project that helped you connect what you are learning in school with what you did in your internship or work opportunity?	0.04
College and Career Counseling	6.1	My teacher adviser or counselor was a good source of information for what classes to take in high school.	0.04
	6.2	My teacher adviser or counselor was a good source of information on what training or education I would need after high school.	0.03
	6.3	My parents were a good source of information on what training or education I would need after high school.	0.00
	6.4	Talked about what I'd like to do after high school.	0.08
	6.5	Talked about different options for college or careers after school.	0.05
	6.6	Talked about my career goal.	0.06
	6.7	Came up with a plan for which classes to take during high school that was aligned to my career goal.	0.05
	6.8	Talked about what classes I'd need to take to achieve my career goal.	0.05
	6.9	Discussed what training or education I would need after high school to achieve my career goal.	0.04
	6.10	Discussed the typical salaries for the careers that I am interested in.	0.04
	6.11	Discussed my career goal with a parent/guardian.	0.04
	6.12	Discussed my plan for which classes to take during high school with a parent/guardian.	0.05
	6.13	Reviewed my plan for which classes to take during high school.	0.04
	6.14	Discussed my career goals.	0.06
	6.15	Made sure my plan for which classes to take during high school still aligned to my career goal.	0.05
	6.16	Discussed the typical salaries for the careers that I am interested in.	0.04
	6.17	Discussed all the different options for colleges.	0.05
	6.18	Discussed the cost savings of starting at a community college and then transferring to a 4-year college.	0.04
	6.19	Discussed financial aid options for study after high school.	0.03
	6.20	Discussed how to apply for education after high school (either college or career training).	0.04
	6.21	Discussed what training or education I would need after high school to achieve my career goal.	0.05
	6.22	Discussed what major I would need to choose in college to achieve my career goal.	0.05
Redesigned Senior Year	7.1	My senior year is preparing me for what I will do after high school.	0.03
	7.2	My school values getting ready for a career just as much as getting ready for college.	0.04
	7.3	I feel ready for what I will be doing after high school.	0.02
	7.4	I had a conversation with an educator at my school where we discussed my SAT or ACT scores and what they meant for determining if I was ready for college.	0.06

Source: Analyses of 2018 SREB student survey results.

● 0.00 – 0.03   ● 0.04 – 0.07   ● 0.08 – 0.11   ● 0.12 – 0.15   ● 0.16 – 0.18

## Appendix B — Quantitative Analysis Results (continued)

Table B1. Intraclass Correlation Coefficient Test Results for All Student Survey Questions

Key Practice	2018 SREB Student Survey Questions		Intraclass Correlation Coefficient (ICC)
	7.5	I had a conversation with someone at my school before my senior year to discuss my readiness for what I would do after high school.	0.05
	7.6	My school helped me prepare for what I will do after high school.	0.04
	7.7	I will have enough credits to graduate after this year.	0.06
	7.8	I feel prepared for college-level classes.	0.05
	7.9	My school took steps to make sure I was prepared for college-level classes.	0.06
	7.10	My school took steps to make sure I was prepared to get a job after high school.	0.02
Culture of High Expectations	8.1	My teachers expect me to continue my education after high school.	0.03
	8.2	The teachers, principal, and other administrators at this school expect all students to get a degree and/or continue their career pathway.	0.03
	8.3	I plan to go to college after high school and/or continue my career pathway.	0.03
	8.4	Teachers at this school have high academic expectations for students.	0.05
	8.5	My school helps me to develop challenging academic goals.	0.05
	8.6	My teachers care about me enough that they will not let me get by without doing the work.	0.03
	8.7	My teachers give me challenging work.	0.03

Source: Analyses of 2018 SREB student survey results.

● 0.00 – 0.03   ● 0.04 – 0.07   ● 0.08 – 0.11   ● 0.12 – 0.15   ● 0.16 – 0.18

## Appendix C — Comparison of High-Performing Students Versus All Other Students

The tables below compare students reporting high performance on national achievement tests (i.e., the ACT or SAT) versus all other students on all questions included in the indices examined in Table 2 (see Page 7). The two right-hand columns present the percentage of students in each group reporting the highest level of school and classroom experiences for that index (i.e., “always” or “almost always” for frequency scale questions and “strongly agree” or “agree” questions for agreement scale questions).

**Table C1. Project-Based Learning**

Survey Item — 2018 SREB Student Survey	Percentage Responding “Always” or “Almost Always”	
	High Performers (%)	All Others (%)
My assignments require me to use information from more than one of my classes.	39	32
Used math to complete an assignment.	49	41
Made a written record of my work.	40	35
Used industry related technology or software on an assignment.	48	38
Presented my solution to experts within the industry.	30	31
Had assignments that required me to test out my solution to a real-world problem.	44	37
Worked with a group to create a solution to a real-world problem.	48	39
Done background research to develop a plan for design.	46	39
Created a solution to a real-world problem.	47	38
To do well on my assignments, I have to really understand what we are learning about.	50	48
I can complete my assignments even if I don’t really understand what we are learning about.	43	36
I have to work on my assignments outside of school to complete them.	53	38
The assignments in my classes are challenging.	45	36
The assignments in my classes really make me think hard.	42	38
When I haven’t done well on an assignment in my career pathway classes, I had the opportunity to redo it.	41	37

Source: Analyses of 2018 SREB student survey results.

**Table C2. SREB’s Powerful Literacy Practices**

Survey Item — 2018 SREB Student Survey	Percentage Responding “Always” or “Almost Always”	
	High Performers (%)	All Others (%)
I understand how the activities we do relate to what we are supposed to be learning.	65	53
My teachers have me do assignments using research from more than one text.	59	51
My teachers have me do written assignments that require me to use evidence from the texts to support what I write.	71	58
I complete written assignments to show what I have learned.	64	51
I learn how to edit my writing.	59	51
I learn how to organize my thoughts about what I want to say before starting a writing assignment	58	49
My teachers give me feedback on my writing.	67	54
I learn skills that help me improve my writing.	54	44
My teachers encourage me to share my opinions about the texts we read.	58	46
My teachers ask questions that really make me think about the texts that we read.	58	48
I learn skills for each subject that help me read the texts for that class.	51	42
We discuss the texts we read with other students in pairs or small groups	51	40
I learn skills that help me read the texts (such as finding key words, summarizing, annotating, etc.)	62	52
I learn how to find evidence for my writing assignments within the texts we read.	64	53

Source: Analyses of 2018 SREB student survey results.

## Appendix C — Comparison of High-Performing Students Versus All Other Students (continued)

**Table C3. SREB’s Powerful Mathematics Practices**

Survey Item — 2018 SREB Student Survey	Percentage Responding “Always” or “Almost Always”	
	High Performers (%)	All Others (%)
My math teachers encourage me to understand math concepts instead of just memorizing rules and procedures.	55	46
If I miss questions on a test or quiz, my teacher gives me extra practice problems for the concepts that I missed.	35	32
If I have misunderstandings on an assignment, my teacher helps me relearn the material with a new assignment.	45	42
If I do not understand a concept in my math classes, my teachers work with me until I understand.	57	50
My math teachers ask tough questions in class that make me really think about the information we are learning.	59	48
My math teachers give me feedback on my work that helps me improve at math.	56	47
My math teachers give me feedback on my assignments that helps me understand why I got an answer wrong.	56	47
I solve math problems that require using more than one math concept to solve.	62	48
The assignments I do in my math classes are challenging.	62	49
When we solve problems, my math teachers ask me to explain how I chose my method of solving the problem.	47	43
My math teachers encourage me to think about more than one way to solve a math problem before I choose my strategy.	49	43
My math teachers have me apply math to situations in the real world.	46	41
During math class, students learn from each other by discussing different ways to solve a problem.	49	43

Source: Analyses of 2018 SREB student survey results.

**Table C4. Culture of High Expectations**

Survey Item — 2018 SREB Student Survey	Percentage Responding “Always” or “Almost Always”	
	High Performers (%)	All Others (%)
My teachers expect me to continue my education after high school.	92	86
The teachers, principal, and other administrators at this school expect all students to get a degree and/or continue their career pathway.	83	79
I plan to go to college after high school and/or continue my career pathway.	94	86
Teachers at this school have high academic expectations for students.	82	78
My school helps me to develop challenging academic goals.	78	73
My teachers care about me enough that they will not let me get by without doing the work.	76	74
My teachers give me challenging work.	84	80

Source: Analyses of 2018 SREB student survey results.

## Appendix D — Stepwise Regression

The tables below offer the full correlation matrix referenced in Table 3 (see Page 8). This correlation evaluates the relationship between students' overall score on the survey, their status as minority or non-minority students, their socioeconomic status and their reading and math achievement scores on the ACT or SAT.

**Table D1. Model Summary**

Model	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	Standard Error of the Estimate
1	.395 <sup>a</sup>	.156	.156	7.22477
2	.477 <sup>b</sup>	.228	.228	6.90999
3	.489 <sup>c</sup>	.239	.239	6.85970
4	.493 <sup>d</sup>	.243	.242	6.84447
5	.494 <sup>e</sup>	.244	.244	6.83742
6	.496 <sup>f</sup>	.246	.245	6.83153
7	.497 <sup>g</sup>	.247	.246	6.82513
8	.498 <sup>h</sup>	.248	.247	6.82146
9	.499 <sup>i</sup>	.249	.248	6.81973

Source: Analyses of 2018 SREB student survey results.

- a. Predictors: (Constant), GraduationCredits
- b. Predictors: (Constant), GraduationCredits, ParentalSupport
- c. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans
- d. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations
- e. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations, APIBCredits
- f. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations, APIBCredits, SelfReportedGrades
- g. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations, APIBCredits, SelfReportedGrades, MothersEd
- h. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations, APIBCredits, SelfReportedGrades, MothersEd, AlgebraInMS
- i. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations, APIBCredits, SelfReportedGrades, MothersEd, AlgebraInMS, OtherDualCredit

## Appendix D — Stepwise Regression (continued)

Table D2. Analysis of Variance (ANOVA)<sup>a</sup>

Model		Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F Ratio	Statistical Significance (p)
1	Regression	56993.053	1	56993.053	1091.878	$p < .001^b$
	Residual	309060.057	5921	52.197		
	Total	366053.109	5922			
2	Regression	83385.156	2	41692.578	873.180	$p < .001^c$
	Residual	282667.953	5920	47.748		
	Total	366053.109	5922			
3	Regression	87531.958	3	29177.319	620.063	$p < .001^d$
	Residual	278521.152	5919	47.055		
	Total	366053.109	5922			
4	Regression	88813.658	4	22203.414	473.958	$p < .001^e$
	Residual	277239.452	5918	46.847		
	Total	366053.109	5922			
5	Regression	89431.305	5	17886.261	382.591	$p < .001^f$
	Residual	276621.805	5917	46.750		
	Total	366053.109	5922			
6	Regression	89954.786	6	14992.464	321.246	$p < .001^g$
	Residual	276098.324	5916	46.670		
	Total	366053.109	5922			
7	Regression	90517.927	7	12931.132	277.597	$p < .001^h$
	Residual	275535.183	5915	46.582		
	Total	366053.109	5922			
8	Regression	90861.067	8	11357.633	244.081	$p < .001^i$
	Residual	275192.043	5914	46.532		
	Total	366053.109	5922			
9	Regression	91047.283	9	10116.365	217.516	$p < .001^j$
	Residual	275005.826	5913	46.509		
	Total	366053.109	5922			

Source: Analyses of 2018 SREB student survey results.

a. Dependent Variable: OverallCount

b. Predictors: (Constant), GraduationCredits

c. Predictors: (Constant), GraduationCredits, ParentalSupport

d. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans

e. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations

f. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations, APIBCredits

g. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations, APIBCredits, SelfReportedGrades

h. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations, APIBCredits, SelfReportedGrades, MothersEd

i. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations, APIBCredits, SelfReportedGrades, MothersEd, AlgebraInMS

j. Predictors: (Constant), GraduationCredits, ParentalSupport, PostHSPlans, EducationalAspirations, APIBCredits, SelfReportedGrades, MothersEd, AlgebraInMS, OtherDualCredit

## Appendix D — Stepwise Regression (continued)

Table D3. Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Statistical Significance ( <i>p</i> )
		<i>b</i>	Standard Error (SE)	$\beta$		
1	(Constant)	40.209	.453		88.762	<i>p</i> < .001
	GraduationCredits	4.216	.128	.395	33.044	<i>p</i> < .001
2	(Constant)	34.969	.487		71.773	<i>p</i> < .001
	GraduationCredits	3.495	.126	.327	27.779	<i>p</i> < .001
	ParentalSupport	2.495	.106	.277	23.510	<i>p</i> < .001
3	(Constant)	34.036	.494		68.928	<i>p</i> < .001
	GraduationCredits	3.317	.126	.310	26.256	<i>p</i> < .001
	ParentalSupport	2.455	.105	.272	23.278	<i>p</i> < .001
	PostHSPlans	1.153	.123	.108	9.388	<i>p</i> < .001
4	(Constant)	32.642	.560		58.276	<i>p</i> < .001
	GraduationCredits	3.215	.128	.301	25.200	<i>p</i> < .001
	ParentalSupport	2.426	.105	.269	23.030	<i>p</i> < .001
	PostHSPlans	.810	.139	.076	5.825	<i>p</i> < .001
	EducationalAspirations	.465	.089	.069	5.231	<i>p</i> < .001
5	(Constant)	32.529	.560		58.043	<i>p</i> < .001
	GraduationCredits	3.217	.127	.301	25.243	<i>p</i> < .001
	ParentalSupport	2.430	.105	.270	23.089	<i>p</i> < .001
	PostHSPlans	.763	.139	.071	5.473	<i>p</i> < .001
	EducationalAspirations	.450	.089	.067	5.066	<i>p</i> < .001
	APIBCredits	.135	.037	.041	3.635	<i>p</i> < .001
6	(Constant)	31.820	.599		53.159	<i>p</i> < .001
	GraduationCredits	3.153	.129	.295	24.484	<i>p</i> < .001
	ParentalSupport	2.415	.105	.268	22.950	<i>p</i> < .001
	PostHSPlans	.631	.145	.059	4.354	<i>p</i> < .001
	EducationalAspirations	.405	.090	.060	4.507	<i>p</i> < .001
	APIBCredits	.126	.037	.039	3.392	.001
	SelfReportedGrades	.256	.076	.043	3.349	.001
7	(Constant)	31.757	.598		53.079	<i>p</i> < .001
	GraduationCredits	3.150	.129	.295	24.484	<i>p</i> < .001
	ParentalSupport	2.469	.106	.274	23.233	<i>p</i> < .001
	PostHSPlans	.678	.145	.063	4.661	<i>p</i> < .001
	EducationalAspirations	.448	.091	.067	4.946	<i>p</i> < .001
	APIBCredits	.134	.037	.041	3.601	<i>p</i> < .001
	SelfReportedGrades	.275	.076	.046	3.593	<i>p</i> < .001
	MothersEd	-.269	.077	-.042	-3.477	.001

Source: Analyses of 2018 SREB student survey results.

a. Dependent Variable: OverallCount

## Appendix D — Stepwise Regression (continued)

Table D3. Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Statistical Significance ( <i>p</i> )
		<i>b</i>	Standard Error (SE)	$\beta$		
8	(Constant)	31.309	.620		50.473	<i>p</i> < .001
	GraduationCredits	3.129	.129	.293	24.299	<i>p</i> < .001
	ParentalSupport	2.475	.106	.275	23.297	<i>p</i> < .001
	PostHSPlans	.654	.146	.061	4.494	<i>p</i> < .001
	EducationalAspirations	.456	.091	.068	5.039	<i>p</i> < .001
	APIBCredits	.122	.037	.038	3.267	.001
	SelfReportedGrades	.242	.077	.040	3.133	.002
	MothersEd	-.291	.078	-.045	-3.747	<i>p</i> < .001
	AlgebraInMS	.506	.186	.032	2.716	.007
9	(Constant)	31.264	.621		50.378	<i>p</i> < .001
	GraduationCredits	3.132	.129	.293	24.322	<i>p</i> < .001
	ParentalSupport	2.468	.106	.274	23.216	<i>p</i> < .001
	PostHSPlans	.644	.146	.060	4.424	<i>p</i> < .001
	EducationalAspirations	.454	.091	.067	5.013	<i>p</i> < .001
	APIBCredits	.093	.040	.029	2.331	.020
	SelfReportedGrades	.241	.077	.040	3.116	.002
	MothersEd	-.294	.078	-.045	-3.776	<i>p</i> < .001
	AlgebraInMS	.510	.186	.032	2.734	.006
	OtherDualCredit	.069	.034	.024	2.001	.045

Source: Analyses of 2018 SREB student survey results.

a. Dependent Variable: OverallCount



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