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INSIGHT BRIEF

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Using Expanded Measures of Student Success for School Improvement

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Enthusiasm for social emotional learning has reached a fever pitch among policymakers and funders.

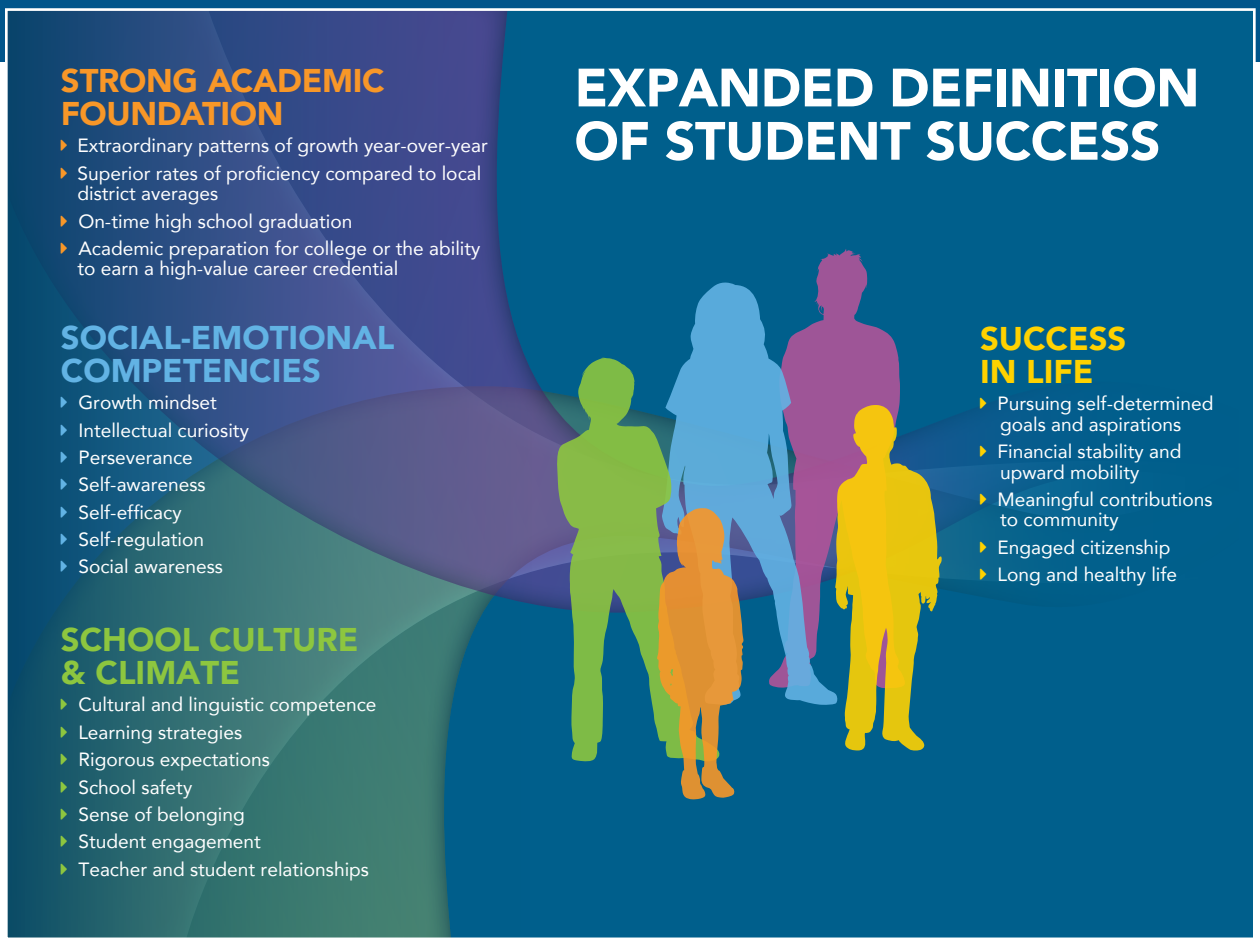
Whether it's framed as a focus on the whole child, comprehensive student development or a richer vision for student learning, broadening beyond math and reading scores as markers of school and student success has gone mainstream.

At NewSchools Venture Fund, we identified this hunger to expand the definition of student success (EDSS) among teachers and school leaders back in 2015. That's the year we began investing in a national portfolio of innovative public schools.[1] We saw teams of educators across the country working to reimagine learning to meet the academic and social emotional learning needs of students in an integrated way. Since then, we've invested in more than 100 teams engaged in the planning and launch of new district and charter schools designed to help students develop the knowledge, mindsets, habits and skills associated with success in young adulthood.

We're not alone. Last year, the Aspen Institute issued a report from a prestigious national commission about the combined importance of academic and social emotional development.[2] Other policy shops and think tanks across the ideological spectrum are engaged in the conversation, as are a growing number of philanthropists. Several state education departments are trying to create a more comprehensive picture of student and school success, consistent with provisions of the federal Every Student Succeeds Act. But such efforts often provide educators with scant support for the hard work of deciding which indicators matter most, helping students develop them, and measuring progress.

To address this, we partnered with Transforming Education (TransformEd) to ask schools in our portfolio which non-academic indicators mattered most to *them*. They collectively named more than 60 skills, traits, mindsets, and values. But we all agreed 60 indicators were far too many to adopt

> Every young person deserves to finish school prepared and inspired to create a good life full of opportunity and purpose. To reach this aim, students need to develop a strong academic foundation and other important mindsets, habits, and skills.



together. So, we filtered the list to those associated with longer-term success in studies from scholars such as Raj Chetty, Camille Farrington and Ron Ferguson.[3] We then narrowed to those that could feasibly be developed and measured in a school environment. This winnowing process yielded a group of seven social emotional competencies and seven culture/climate factors our schools are now paying attention to, along with a shared set of academic measures. The culture/climate factors we chose correlate with learning environments that support students' academic and social emotional development, which together help prepare students for a good life: pursuing self-determined goals and aspirations, experiencing financial stability and upward mobility, making meaningful contributions to community, participating as an engaged citizen, and living a long and healthy life.[4]

Since the 2016-2017 school year, we've partnered with TransformEd to provide our schools with data, evidence-backed resources and technical assistance to support them in advancing EDSS. Our primary goal is to provide educators in our portfolio schools with the information and insights they need to support the academic and social emotional development of each of their students. But we also want to advance the state of practice, research, and policy more broadly. That's why we're committed to sharing what we're learning about supporting student success and helping schools get better.

In Summer 2018, we released an Insight Brief with four key headlines from the first year of the project.[5] This new Insight Brief is based on the second year of the project, which included 40 district and charter schools in 16 states that served nearly 12,000 students during the 2017-18 school year. Seventy

GROWTH

75% of our schools have a majority of students meeting/exceeding growth goals in math; 80% in reading

75%
in math

80%
in reading

PROFICIENCY

69% of our schools outperform their local districts on math proficiency; 63% in reading

69%
in math

63%
in reading

percent of these students are Black or Latino, 65 percent are eligible for free- or reduced-lunch (FRL), and 14 percent are students with disabilities. Together these schools outpace national averages on measures of academic growth and outperform their local districts on state exams.

Based on what we are learning together, our team developed five new insights that will inform our work going forward. Our hope is that they will be useful to educators, schools, other funders, researchers and policymakers:

1. **Get specific. Pick a few aligned indicators, ensure commitment to them, and provide resources and practices to improve them.**
2. **The hunger for external benchmark data is enormous, but homegrown data is often more useful and actionable.**
3. **Schools with two years of data improved on all social-emotional and culture/climate indicators we track. But their patterns of academic growth are not as consistent.**
4. **Growth mindset and perceptions of school safety are once again the indicators most strongly associated with academic performance in the social emotional and culture/climate categories.**
5. **A surprising trend: Sense of belonging is not correlated with academic outcomes in our data.**

Get specific. Pick a few aligned indicators, ensure commitment to them, and provide resources and practices to improve them.

We measure seven social-emotional competencies and seven school culture/climate factors across our portfolio (see Tables 1 and 2 for definitions). We're committed to collecting this information consistently across schools in order to build a national dataset with benchmarks that other schools and networks can use to inform their improvement efforts. This also advances our multi-year effort to understand which competencies correlate most powerfully with longer-term academic growth and proficiency.

However, schools struggled to focus on 14 indicators at once; it's simply too many to inform daily practice. So, individual schools in our portfolio select and focus on a subset aligned most powerfully with their own innovative school design. We've found that in the early launch years (the first 1-3 years of operating a school), school leaders most frequently cite growth mindset, perseverance, and self-regulation as their top social-emotional priorities. Safety and teacher-student relationships are most often their top culture/climate priorities.

For example, one of the K-8 schools in our portfolio created a graduate profile that prioritizes several social-emotional competencies in our framework, including social awareness and growth mindset. The school identified developmental milestones for students by working backwards from this graduate profile. Every trimester, the school facilitates conversations among parents, students, and teachers to discuss student progress against these milestones. They are also explicit about how key culture/climate factors—including school safety and teacher-student relationships—create the conditions for student learning. The leadership team includes a clinical therapist who serves as the school's director of mental health and social-emotional learning.

TABLE 1. **Social-emotional competencies measured in the NewSchools portfolio[6]**

Indicator	Definition
GROWTH MINDSET	The belief that one's abilities and skills can grow with effort
INTELLECTUAL CURIOSITY	A strong desire to learn information or know something for its own sake
PERSEVERANCE	The tendency to stay focused on a goal despite obstacles and to forego distractions or temptations to prioritize higher pursuits over lower pleasures
SELF-AWARENESS	The ability to accurately recognize one's own emotions, thoughts, and values and how they influence behavior
SELF-EFFICACY	The belief in one's own ability to succeed in achieving an outcome or reaching a goal
SELF-REGULATION	The ability to regulate one's emotions, thoughts, and behaviors effectively in different situations
SOCIAL AWARENESS	The ability to understand others' perspectives and empathize with them

TABLE 2. **Culture/climate factors measured in the NewSchools portfolio**[7]

Indicator	Definition
CULTURAL AND LINGUISTIC COMPETENCE	A congruence of beliefs, behaviors, and systems that promote empathy and understanding among diverse populations
LEARNING STRATEGIES	Students' deliberate use of strategies to manage their own learning processes in class
RIGOROUS EXPECTATIONS	Students' feelings about how much they are held to high expectations for effort, understanding, persistence, and performance in class
SCHOOL SAFETY	Perceptions of students' physical and psychological safety while at school
SENSE OF BELONGING	How much students feel that they are valued members of the school community
STUDENT ENGAGEMENT	Students' level of attentive and investment in their classes
TEACHER AND STUDENT RELATIONSHIPS	How strong the social connection is between teachers and students within and beyond the classroom

The school is part of a network where school leaders all participate in data deep dives with their teams to explore within-school and across-network trends. They have begun using the data to inform decisions about the content and sequence of professional development for teachers and supports for specific groups of students. As a result, the network demonstrated notable growth in the 2017-18 school year in the areas it focused on, such as developing a growth mindset.

This example highlights three practices we see in our portfolio that other schools should find useful:

1. **Integrated Approach** – teams create a graduate profile that articulates the knowledge, skills, and mindsets a successful student should have. They then use it to focus on a few indicators that are most aligned with the profile and enlist educators in a shared vision of how to help students reach them. The profile can also serve as a roadmap for determining the types of resources and supports students and teachers need to make specific progress in academics, social emotional competencies, and school culture/climate.
2. **Shared Ownership** – the most effective school leaders in our portfolio are cultivating a commitment to an expanded definition of success by engaging teachers and leadership team members in the rationale behind their priority indicators, as well as the data analysis and problem-solving necessary for improvement. This approach helps ensure commitment and aligned action across all levels of school leadership.
3. **Iterative Process** – our schools making strong progress engage in an ongoing cycle of feedback and continuous improvement. We've found the most useful campus-specific insights come from a rapid PDSA cycle of *planning* → *doing* → *studying* → *acting*. Our most successful school leaders come to their data deep-dive conversations with specific questions in mind, which enables them to quickly develop solid hypotheses and to propose steps for deeper school-wide reflection and action-planning.

INSIGHT 2

The hunger for external benchmark data is enormous, but homegrown data is often more useful and actionable.

In the first year of this project, school leaders sought to compare their data against the "typical" results from other schools in our portfolio, and to benchmark their progress against other large-scale external datasets (such as those from the CORE districts in California).[8] But increasingly, schools find digging deep into their own data is the most powerful means for driving change.

That's because throughout the second year of this project, we found there is much greater within-school variation than between-school variation in how students perceive the school environment and their own social-emotional competencies. It's a pattern reflected in other education studies as well.[9]

What's new is that our data collection, reporting, and coaching tools equip educators to respond to how different groups of students experience school. Instructional teams in our schools employ a three-step process to create stronger learning environments and develop the social-emotional competencies of every student:

1. **Student surveys** administered during the first six and last six weeks of the school year capture and amplify student voices, beliefs, and perceptions.
2. **Customized data dashboards**, delivered within weeks after the survey, allow school leaders to filter and compare responses by grade level and various demographic factors (race, gender, English Language Learner status, Free and Reduced Lunch status, special education status). These empirically grounded insights equip educators to support the holistic development of all students.
3. **Action-oriented data conversations** help teams make sense of their own data and identify bright spots and growth areas that challenge or confirm preexisting narratives at their school. Through data deep dives, leaders explore potential explanations for promising and concerning trends, learn about evidence-supported intervention strategies, and develop a plan for moving forward.

For example, one of our high schools invested in efforts to support their English Language Learners (ELLs) during their initial transition to high school. They focused on building strong teacher-student relationships, cultivating a sense of belonging, and strengthening perceptions of school safety among English learners. And they hired staff with ELL practice backgrounds to better support students. As a result of these efforts, our dashboards revealed that in spring 2018, 72 percent of ELL students at the school reported having positive teacher-student relationships, compared with 52 percent of non-ELL students in the school and 36 percent of Black students. This complicated finding suggests that specific and targeted efforts to strengthen teacher-student relationships with an especially vulnerable group of students had the intended effect, but perhaps at the expense of investments that could have helped other students. As one educator in this school reflected, "What we did works; now we need to apply that strategy to other groups."

> There is much greater within-school variation than between-school variation in how students perceive the school environment and their own social-emotional competencies.

INSIGHT 3

Schools with two years of data improved on all social-emotional and culture/climate indicators we track. But their patterns of academic performance are not as consistent.

Schools in their second year of our partnership saw an increase on all 14 non-academic indicators from spring 2017 to spring 2018. The greatest increases over time occurred among student perceptions of school culture/climate, especially on measures of student-teacher relationships. This is promising. It suggests that we are helping schools move in the right direction by improving students' perceptions of the learning environment and demonstrating a positive increase in social-emotional competencies. It also suggests that an orientation toward continuous improvement—using data-informed inquiry, testing hypotheses, committing to a change, and iterating based on results—can help schools get better, especially when coupled with resources like TransformEd's toolkits and curated lists of evidence-based strategies.[10]

We are eager to explore the results from the third year of the project to see if there is a more robust story of positive longitudinal impact. In the meantime, we are wrestling with the fact that our portfolio-wide academic data does not tell the same clear and compelling story of year-over-year change. For example, we saw improvement on measures of academic growth at half of our schools from 2016-17 to 2017-18. But academic growth patterns were relatively flat at others and decreased at two schools. On measures of academic proficiency, reading scores stayed relatively flat; math proficiency improved at half the schools in our portfolio, but was flat in several others, and decreased at one school.

We currently have two hypotheses about what might be happening. First, some of these academic patterns might be explained by the relatively high growth and proficiency our schools demonstrated the prior year. As achievement gaps narrow and schools reach higher levels of overall performance, it becomes increasingly challenging to exhibit exceptional patterns of academic growth year-over-year. Second, it's possible that in an effort to embrace an expanded definition of student success, some school leaders might have focused on "getting culture right" more than they prioritized instruction. This "culture-first" view is not uncommon in school improvement. We agree school culture is important, but it's not a substitute for strong instruction. As we noted earlier, school teams must take an

INSIGHT 3

integrated approach to developing positive culture along with developing students' social emotional competencies and academic knowledge and skills.

One school that consistently produces some of the highest culture and climate ratings within our portfolio illustrates the challenges of this comprehensive approach to student development. Across nearly every demographic variable we track, students at this school rate the strength of teacher-student relationships notably above our portfolio averages. Likewise, teachers at this school have exceptionally positive perceptions about their students and their fellow educators. These mutual feelings—of good will, optimism, warmth, and connection—are palpable when you walk across the campus and observe students and teachers in action. Weekly small group advisories, for example, provide space and time for emotionally rich and authentic conversations among students and teachers. The boundaries of the school day extend to local civic spaces such as parks, museums, and businesses to emphasize the boundless nature of the learning environment. And yet, some student subgroups still have patterns of underperformance on measures of growth and proficiency in math and reading. We are working with leaders at this school to better understand their context and provide better supports to improve academic performance. Their leadership team is exploring senior-level personnel moves, identifying new assessments that better track improvement efforts, and focusing on executive function skills (such as how to focus attention and ignore distractions, keep ideas in mind, and switch gears) that are coherent with their academic model.

We are also in the early phases of designing a more robust continuous improvement pilot to better equip schools with even more targeted instructional supports and formalized rapid learning cycles. Our plan is to complement our current suite of social-emotional and culture/climate tools and services with stronger academic supports so that every school in our portfolio demonstrates year-over-year progress in all dimensions of our expanded definition of student success.

School culture is important, but it's not a substitute for strong instruction.

INSIGHT 4

Growth mindset and perceptions of school safety are once again the indicators most strongly associated with academic outcomes in the social emotional and culture/climate categories.

For two consecutive years, student-reported growth mindset ratings have had the strongest correlation with math and reading achievement, overall and across subgroups by grade level and race.[11]

- The spring 2017 growth mindset correlations were .43 for all students in math and .44 for all students in reading ($p < .001$)
- The spring 2018 growth mindset correlations were .32 for all students in math and .36 for all students in reading ($p < .001$)

We also confirmed another early pattern we reported after the first year of the project: Correlations between all seven of our social-emotional competencies and academic achievement, as measured by NWEA RIT scores in math and reading, are positive and statistically significant in both our 2016-17 and 2017-18 datasets. In addition, there is a consistent pattern of statistically positive correlations between our social-emotional competencies and measures of growth in math and reading.

Most of the culture/climate indicators are also positively and significantly correlated with math and reading outcomes. (See Insight 5 for one notable exception.) Student perceptions of school safety is the factor with the most consistently strong relationship to academic achievement and growth.[12]

- The spring 2017 school safety correlations were .17 for all students in math and .23 for all students in reading ($p <.001$)
- The spring 2018 school safety correlations were .21 for all students in math and .23 for all students in reading ($p <.001$)

These are correlations, not causal relationships. But the persistent patterns — punctuated by growth mindset and school safety as the social-emotional competency and culture/climate factor most correlated with academic achievement — are worth highlighting. This is especially important given the debate about whether helping students believe in the elasticity of their intelligence promotes learning.[13] We cannot yet speak to the *why* of these associations; but they endure and are relatively strong. In total, they affirm the interconnections between the academic and non-academic factors in our expanded definition of student success.

GROWTH MINDSET Correlations
($p < .001$)

	Math	Reading
Spring 2017	.43	.44
Spring 2018	.32	.36

SCHOOL SAFETY Correlations
($p < .001$)

	Math	Reading
Spring 2017	.17	.23
Spring 2018	.21	.23

By comparing our dataset with other datasets nationally, we've also found some interesting consistencies. We survey our 4th through 12th grade students on four social-emotional competencies also used by the California CORE districts in their survey of 625,000 students: growth

TABLE 3. **Survey items for growth mindset, school safety, and sense of belonging**

GROWTH MINDSET 	**The social-emotional competency with the strongest correlation to academic outcomes** » Challenging myself won't make me any smarter. » There are some things I am not capable of doing. » My intelligence is something that I can't change very much. » If I am not naturally smart in a subject, I will never do well in it.
SCHOOL SAFETY 	**The culture/climate factor with the strongest correlation to academic outcomes** » How often are people disrespectful to others at your school? » How often do students get into physical fights at your school? » How likely is it that someone from your school will bully you online? » How often do you worry about violence in your school? » If a student is bullied in school, how difficult is it for him/her to get help from an adult? » At your school, how unfairly do the adults treat the students?
SENSE OF BELONGING 	**The only non-academic indicator in our EDSS framework not correlated with academic outcomes** » How well do people at your school understand you as a person? » How connected do you feel to the adults at your school? » How much respect do students in your school show you? » How much do you matter to others at this school? » Overall, how much do you feel like you belong at your school?

mindset, self-efficacy, self-regulation, and social awareness. The average grade-level results in our data align closely with those of the CORE dataset. This means 4th graders in our schools, for example, score statistically similar on each social-emotional competency to 4th graders in schools outside our portfolio. This trend is consistent at every level from 4th through 12th grade.

In both the NewSchools and CORE datasets, we also see continued evidence that student survey results tend to decline in the middle school years followed by a partial recovery in later grades. It's a phenomenon we highlighted in our first Insight Brief.[14] In total, these data help us understand the types of developmental variations we can expect in survey results for select competencies.

In addition, we confirmed a pattern evident in the Boston Charter Research Collaborative's dataset: There is a slight decline in student-reported social-emotional competencies and perceptions of school culture/climate from the fall to spring semesters.[15] TransformEd has produced a working paper that explores hypotheses for this trend, including "time of year" effects, or the differences in overall student optimism at the beginning versus end of year.[16]

INSIGHT 5

A surprising trend: Sense of belonging is not correlated with academic outcomes in our data.

Sometimes, non-findings are just as important and interesting as positive findings. For the second year in a row, students in our schools reported relatively high levels of belonging, though with some differences by subgroups.[17] However, we found no correlation between sense of belonging and academic performance. In four straight semesters (fall 2016, spring 2017, fall 2017, spring 2018):

- There is no significant relationship between sense of belonging and academic achievement levels, as measured by NWEA's RIT scores.[18]
- There is no significant relationship between sense of belonging and academic growth as measured by NWEA MAP Growth scores.[19]

Students' sense of belonging is the *only* non-academic indicator in our framework that fails to register in such a fashion. This contrasts with existing evidence on sense of belonging, a construct that taps into ideas about whether students feel like valued members of their school community.[20] For example, Matthew Kraft and colleagues in the Mindset Scholars Network are using CORE district data to track changes in student self-reports of belonging. They discovered that as students increasingly felt a stronger sense of belonging at school, their math and reading scores improved.[21] We also know that evidence from higher education has shown that simple interventions designed to bolster feelings of belonging in college have cut in half the Black-White achievement gap in GPA, boosted students' self-reported happiness and wellbeing, and even reduced doctor visits.[22]

Given the existing research base, we're not entirely sure what to make of this finding in our data. Maybe it speaks to the particular nature of our schools, students, and dataset. Our schools are in their first few years of operation, share a commitment to creating innovative learning environments, and tend to serve a higher percentage of Black, Latino, and low-income students than in national samples.

It could also be the way we measure students' sense of belonging, which considers student perceptions at a point-in-time versus how their sense of belonging might change over time. However, we use items from the Panorama Student Survey and published a working paper about the validity of our approach to measuring belonging and other non-academic indicators.[23] As we noted in the working paper, one of the five items in our belonging scale seems to overlap with the construct of teacher-student relationships; but this alone wouldn't explain the lack of an association with academics in our dataset. Perhaps it's due to the way we measure academic growth and achievement with MAP data, since some studies use grade-point average.[24] Finally, we might need to revisit what we mean by belonging and therefore how we measure it. For example, some scholars distinguish between the idea of *social belonging* and *academic belonging*; the former is more focused on student relationships with their teachers and peers; the latter is more focused on an alignment of content interests, supports, expectations, and opportunities.[25]

> This contrasts with existing evidence on sense of belonging, a construct that taps into ideas about whether students feel like valued members of their school community

In the coming year, we will conduct more sophisticated analyses to explore the directionality, strength, and endurance of our 14 social-emotional and culture/climate indicators on academic growth and proficiency. We will pay special attention to understanding what patterns of association exist – if any – between sense of belonging and academic performance.

LOOKING AHEAD

In the coming year, we'll be visiting our portfolio schools that demonstrated consistently strong culture/climate and social-emotional outcomes to learn more about the specific practices they use. This qualitative data effort will help us offer more detailed answers to questions like, "What specific strategies can schools use to improve students' social-emotional development and school culture/climate?" and "What signposts along the way will let schools know if they are on the right track?"

The 2018-19 school year study will include data from an additional 18 schools that opened their doors that year, which will again increase the robustness of our sample. As the dataset continues to expand, we aim to look at longitudinal patterns by student cohorts so we can understand how students are progressing academically, socially and emotionally year-over-year. We also plan to deepen our understanding of the experience of different student subgroups to ensure all schools are creating equitable learning opportunities.

In the meantime, we are eager to hear your thoughts about these insights and any lessons learned from your own efforts to expand the definition of student success. Reach out to Jason Atwood, our Director of Research and Learning, at jatwood@newschools.org to continue the conversation!

ENDNOTES

[1] For an overview of our innovative schools strategy, please see https://www.newschools.org/about-us/investment-areas/innovative-schools/

[2] The Aspen Institute National Commission on Social, Emotional, & Academic Development. (2019). *From a Nation at Risk to a Nation at Hope*. Retrieved from http://nationathope.org/report-from-the-nation/

[3] See literature review in:

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- Stafford-Brizard, B. (2016). *Building blocks for learning: A framework for comprehensive student development*. New York, NY: Turnaround For Children. Retrieved from https://www.turnaroundusa.org/wp-content/uploads/2016/03/Turnaround-for-Children-Building-Blocks-for-Learningx-2.pdf

[4] Our EDSS framework is available for download at https://bit.ly/EDSS-Graphic

[5] Our first insight brief, based on data from the 2016-17 school year, is available at https://bit.ly/EDSSinsightbrief

[6] These EDSS concepts, definitions, and measurement tools are rooted in the research from several sources, including: Albert Bandura at Stanford University; American Institutes for Research; Angela Duckworth of the University of Pennsylvania; the Boston Charter Research Collaborative; California CORE Districts; Carol Dweck of Stanford University; Collaborative for Academic, Social, and Emotional Learning (CASEL); Camille Farrington of the University of Chicago Consortium on School Research; Character Lab; Clancy Blair of New York University; ETS; Hunter Gehlbach of the University of California, Santa Barbara; the National Assessment of Educational Progress; Panorama Education; the U.S. Department of Education's School Climate Surveys (EDSCLS); and Washoe County School District. For a list of all survey items and response options to the non-academic indicators in our EDSS framework, see Appendix A on pages 36-41 of Buckley et al. (2018) at https://www.transformingeducation.org/wp-content/uploads/2019/01/NSI-RQ1-Final-Paper-for-website.pdf

[7] See above note.

[8] CORE is a consortium of some of the largest school districts throughout California that serve roughly 1.1 million of the 6.2 million K-12 students in the state. For a history of CORE, see:

- Knudson, J., & Garibaldi, M. (2015). *None of us are as good as all of us: Early lessons from the CORE Districts*. San Mateo, CA: American Institutes for Research. Retrieved from http://coredistricts.org/wp-content/uploads/2017/08/AIR-Report-August-2015.pdf

[9] Buckley, K., Subedi, S., Paek, J. W., Krachman, S., & Gehlbach, H. (2019). *Which individual and school-level factors predict student perceptions of the school climate in a diverse sample of charter schools throughout the country?* Boston, MA: Transforming Education. Retrieved from https://www.transformingeducation.org/wp-content/uploads/2019/06/Final-for-Website-RQ2_CC-perceptions-1.pdf.

See also:

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[10]TransformEd's toolkits and curated list of practical classroom strategies can be accessed at https://www.transformingeducation.org/resources/for-educators/

[11]We use four self-report items as a measure of growth mindset, asking students to indicate how true each of the following statements is for them:

- *Challenging myself won't make me any smarter*
- *There are some things I am not capable of learning*
- *My intelligence is something that I can't change very much*
- *If I am not naturally smart in a subject, I will never do well in it*

This growth mindset scale was developed by Camille Farrington and her colleagues at the University of Chicago's Consortium on School Research for the *Becoming Effective Learners Survey Development Project*. It builds upon the foundational work of Carol Dweck at Stanford University and has also been administered among schools in the California CORE District and Boston Charter Research Collaborative. For more information, see:

- Buckley, K., Subedi, S., Krachman, S., Atwood, J. & Education Analytics (2018). *Working paper: Measurement properties of student social-emotional competency and school culture-climate surveys in the NewSchools Invent cohort*. Boston, MA: Transforming Education. Retrieved from https://www.transformingeducation.org/wp-content/uploads/2019/01/NSI-RQ1-Final-Paper-for-website.pdf
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[12]Our school safety scale was developed by Panorama Education. It asks students to respond to six survey items:

- *How often are people disrespectful to others at your school? (Answer choices: Almost never to Almost always)*
- *How often do students get into physical fights at your school? (Answer choices: Almost never to Almost always)*
- *How likely is it that someone from your school will bully you online? (Answer choices: Not at all likely to Extremely likely)*
- *How often do you worry about violence in your school? (Answer choices: Almost never to Almost always)*
- *If a student is bullied in school, how difficult is it for him/her to get help from an adult? (Answer choices: Not at all difficult to Extremely difficult)*
- *At your school, how unfairly do the adults treat the students? (Answer choices: Not at all unfairly to Extremely unfairly)*

For more information, see https://www.panoramaed.com/panorama-student-survey

[13]Hendrick, C. (2019). The growth mindset problem. Aeon. Retrieved from https://aeon.co/essays/schools-love-the-idea-of-a-growth-mindset-but-does-it-work

[14]Atwood, J., & Childress, S. (2018). *Embracing and measuring an expanded definition of student success*. Oakland, CA: NewSchools Venture Fund. Retrieved from https://bit.ly/EDSSinsightbrief

[15]The Boston Charter Research Collaborative is a multiyear partnership between six regional charter schools and charter management organizations, the Center for Education Policy Research at Harvard University, MIT, and TransformEd that focuses on research and practice to support students' cognitive and social-emotional development. For more information, see https://cepr.harvard.edu/boston-charter-research-collaborative

[16]Buckley, K., & Krachman, S. (2016). *Patterns in student self-report and teacher report measures of social-emotional mindsets, skills, and habits*. Boston, MA: Transforming Education. Retrieved from https://www.transformingeducation.org/wp-content/uploads/2017/04/TE-BCRCWorkingPaperFINAL.pdf

[17]We assess students' sense of belonging with four items curated from Panorama's Student Survey:

- *How well do people at your school understand you as a person? (Answer choices: Do not understand at all to Completely understand)*
- *How connected do you feel to the adults at your schools? (Answer choices: Not at all connected to Extremely connected)*
- *How much respect do students in your school show you? (Answer choices: No respect at all to A tremendous amount of respect)*

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- *How much do you matter to others at this school? (Answer choices: Do not matter at all to Matter a tremendous amount)*
- *Overall, how much do you feel like you belong at your school? (Answer choices: Do not belong at all to Completely belong)*

For more information on the sense of belonging instrument, see https://www.panoramaed.com/panorama-student-survey and Buckley et al. (2018) at https://www.transformingeducation.org/wp-content/uploads/2019/01/NSI-RQ1-Final-Paper-for-website.pdf

[18]NWEA's RIT scale stands for Rasch Unit scale. The resulting RIT scores measure a student's level of achievement in a tested subject. For more on NWEA's RIT scale, see https://community.nwea.org/docs/DOC-1647

[19]NWEA's conditional growth index (CGI) is "a standardized measure of observed student or school growth compared to [national] norms." For more on NWEA's CGI, see https://community.nwea.org/docs/DOC-1642

[20]For a summary of research on belonging in education:

- Romero, C. (2015). *What we know about belonging from scientific research*. Mindset Scholars Network. Retrieved from http://mindsetscholarsnetwork.org/wp-content/uploads/2015/09/What-We-Know-About-Belonging.pdf

See also:

- An illuminating conversation among Mindset Scholars Network members Claude Steele, Mary Murphy, and Gregory Walton at https://mindsetscholarsnetwork.org/studying-belonging-education-conversation-claude-steele-mary-murphy-gregory-walton/
- Juvonen, J. (2006). Sense of belonging, social bonds, and school functioning. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of education psychology* (pp. 655-674). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

[21]Hennessey, J. (2018). *Mindsets and the learning environment: Evidence from half a million students on the importance of belonging in school*. Mindset Scholars Network. Retrieved from http://mindsetscholarsnetwork.org/wp-content/uploads/2018/08/Evidence-from-Half-a-Million-Students-on-the-Importance-of-Belonging-in-Schools.pdf

[22]The research base about belonging among college students is relatively robust, much of which is discussed in:

- Yeager, D. S., & Walton, G. M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research*, 81(2), 267-301. https://doi.org/10.3102/0034654311405999

Other relevant research includes:

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- Master, A. (2015). Countering stereotypes and enhancing women's sense of belonging to reduce gender gaps in pSTEM. Mindset Scholars Network. Retrieved from http://mindsetscholarsnetwork.org/wp-content/uploads/2015/09/Reduce-Gender-Gaps-in-pSTEM.pdf
- O'Keefe, P. (2013). A sense of belonging: Improving student retention. *College Student Journal*, 47(4), 605-613. Retrieved from https://eric.ed.gov/?id=EJ1029294
- Strayhorn, T. L. (2019). *College students' sense of belonging: A key to educational success for all students*. New York, NY: Routledge.
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 1(92), 82-96. https://doi.org/10.1037/0022-3514.92.1.82
- Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447-1451. https://doi.org/10.1126/science.1198364

[23]For more information on the Panoram Student Survey, see https://www.panoramaed.com/panorama-student-survey; to read our measurement working paper, see Buckley et al. (2018) at https://www.transformingeducation.org/wp-content/uploads/2019/01/NSI-RQ1-Final-Paper-for-website.pdf

[24]Anderman, L. H. (2003). Academic and social perceptions as predictors of change in middle school students' sense of school belonging. *The Journal of Experimental Education*, 72(1), 5-22. https://doi.org/10.1080/00220970309600877

[25]Green, M., Emery, A., Sanders, M., & Anderman, L. A. (2016). Another path to belonging: A case study of middle school students' perspectives. *The Educational and Developmental Psychologist*, 33(1), 85-96. https://doi.org/10.1017/edp.2016.4