

OECD Test for Schools:

How Three School Systems Are Improving Student Achievement

January 2017

Granger Independent School District (TX) • University Academy (MO) • Gwinnett County Public Schools (GA)

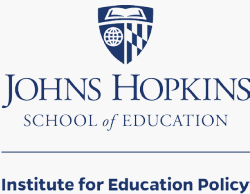
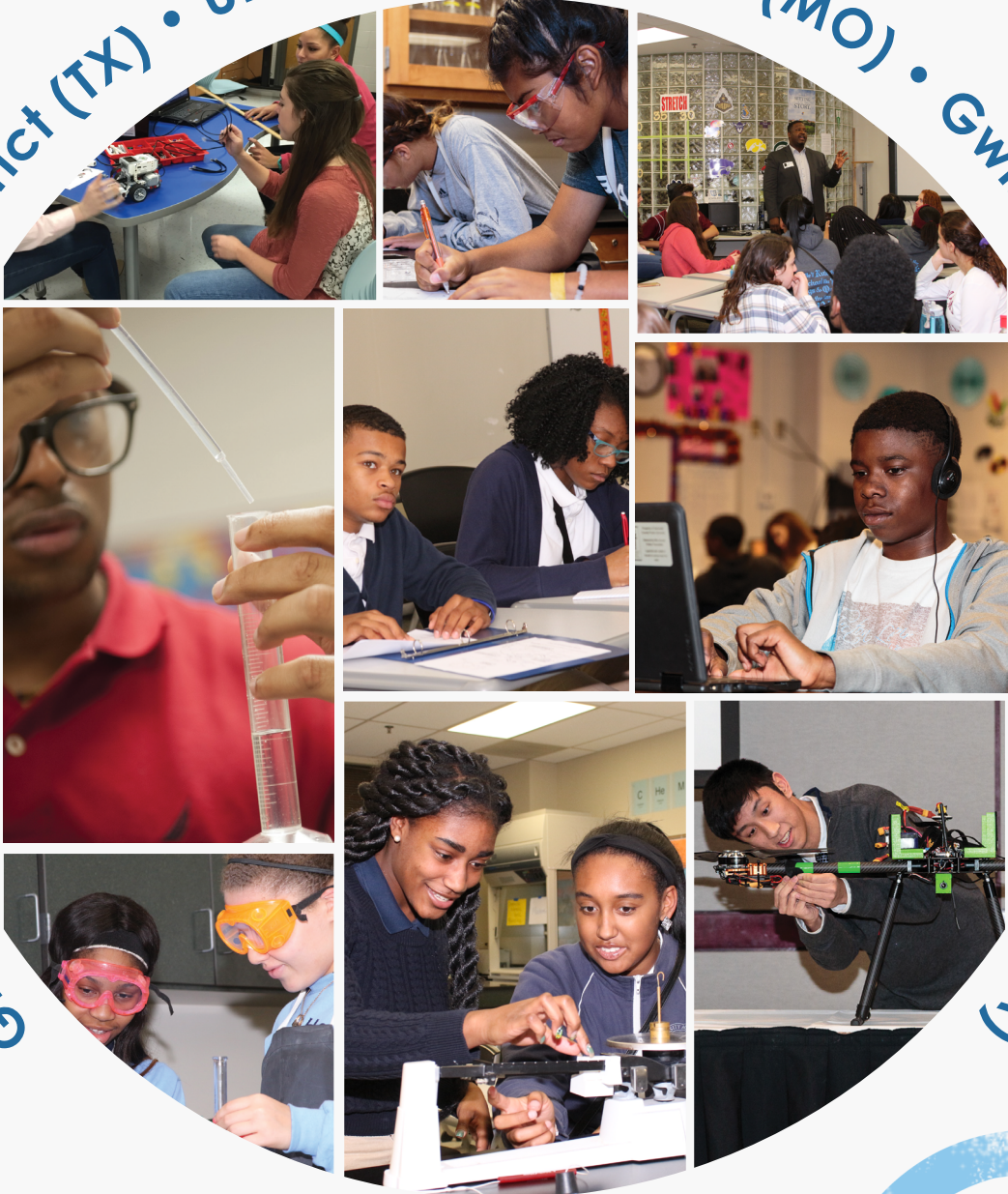


Table of Contents

The Opportunity.	1
OECD Test for Schools	1
Gwinnett County Public Schools (Georgia)	3
Granger Independent School District (Texas)	4
University Academy (Kansas City, Missouri)	5
Conclusion	7
Endnotes	8

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The Opportunity

Information technology and globalization have caused a fundamental shift in national economies. Workforce participation requires increasingly higher levels of education and skill; the percentage of jobs that require a postsecondary education rose 20 percent between 1998 and 2009, while the percentage that are open to those with eleven years of schooling or fewer declined by 12 percent.

The balance of occupations also is shifting. Between 1980 and 2007, the percentage of jobs in the business service area increased 100 percent, while jobs in manufacturing declined 30 percent across all countries in the Organisation for Economic Co-operation and Development (OECD).¹ Evidence suggests that even basic proficiency in literacy, numeracy, and problem solving is positively and independently correlated with workforce participation and higher wages.² How does the United States know whether its students are on track for success in this rapidly changing world?

One important indicator of students' performance comes from the most cited and well-established international benchmark: the Programme for International Student Assessment (PISA). Every three years since 2000, more than 500,000 fifteen-year-old students worldwide have participated in PISA, a series of tests in reading, math, and science fielded by the OECD. PISA is designed to assess whether students have the capacity to apply their knowledge to real-life situations and participate fully in society.

The United States's performance on PISA has, historically, been less than strong. Among the seventy-two nations and economies that participated in PISA 2015, the United States ranked thirty-ninth in math and twenty-third in reading. In science, U.S. scores remained stable with those on the 2012 PISA, and the United States ranked twenty-fifth internationally.³ At the same time, the 2015 PISA results indicate that the United States had the largest increase (12 percentage points) since 2006 in "academically resilient" students—"disadvantaged students who perform better than predicted by their socioeconomic status"—and produced students with higher levels of interest in science than their peer nations.⁴

PISA provides important country-level information, and in the United States, Massachusetts includes an additional sample of schools to produce a state-level report.⁵ PISA is not designed to create actionable data for the real-world experience of superintendents, principals, teachers, and students, though, because the sample of students who take the test in any given school is too small. Therefore, to leverage the assessment in their classrooms, more than 400 U.S. schools have administered the OECD's PISA-based Test for Schools since 2012.⁶

OECD Test for Schools

The OECD Test for Schools, as it is known in the United States, provides a school-level—as opposed to a state- or national-level—PISA report. In each participating school, a random sample of at least eighty-five fifteen-year-old students takes the



Photo courtesy of University Academy



Photo by James Kegley for the Eli and Edythe Broad Foundation, courtesy of Gwinnett County Public Schools

reading, math, and science exams (amounting to two hours of testing) and completes a student survey of no more than thirty minutes. Each school's principal also responds to a thirty-minute survey. Schools allocate three to three and one-half hours to the testing period, including instruction, breaks, and the student questionnaire. They are not bound to administer the test on a given day, but rather within a two-week time frame of the school's choosing.

The academic portions of the OECD Test for Schools reflect PISA's test and question design, and as such, they differ from most standardized assessments in the United States. Rather than provide a series of disconnected questions, PISA and the OECD Test for Schools cluster them into units that revolve around a complex theme and build upon one another. For instance, PISA 2015 science questions included an extended scenario called "Running in Hot Water," in which students are asked to assimilate information about dehydration, populate an interactive chart with air humidity and body temperature data, and form conclusions about the health risks posed to an individual running on a hot day without water.⁷

The OECD places students' scores into six levels of proficiency with level 6 representing the highest level. The OECD explains it this way:

At proficiency level 6, students can consistently identify, explain and apply scientific knowledge and knowledge about science in a variety of complex life situations. They can link different information sources and explanations and use evidence from those sources to justify decisions. They clearly and consistently demonstrate advanced scientific thinking and reasoning, and they demonstrate willingness

to use their scientific understanding in support of solutions to unfamiliar scientific and technological situations. Students at this level can use scientific knowledge and develop arguments in support of recommendations and decisions that center on personal, social or global situations.⁸

Level 2 "defines the level of achievement at which students begin to demonstrate the science competencies that will enable them to participate actively in life situations related to science and technology:"

At proficiency level 2, students have adequate scientific knowledge to provide possible explanations in familiar contexts or draw conclusions based on simple investigations. They are capable of direct reasoning and making literal interpretations of the results of scientific inquiry or technological problem solving.⁹

Scores from both PISA and the OECD Test for Schools correlate to these proficiency levels, from level 1 (a score of 335–408) and level 2 (409–483), to level 6 (708 and above). The mean test scores in the United States on PISA tend to fall in the level 3 range (a score between 484 and 558).¹⁰

The PISA and OECD Test for Schools student surveys are designed to illuminate personal and affective aspects of students' lives, such as the number of family members who live with the student, the educational attainment of each parent, and the educational atmosphere of the home.¹¹ Critically, the survey also probes the students' relationship with the PISA subject of emphasis (reading, math, or science) and with their teachers. The 2012 PISA emphasized math, and the student survey thus included a scale ("strongly agree," "agree," "disagree," "strongly disagree") for statements, such as "Mathematics is an important subject for me, because I need it for what I want to study later on," and "My parents believe it's important for me to study math."

The survey also explores students' self-confidence, which research suggests often predicts academic performance and explains roughly 23 percent of the variance in math performance across OECD countries.¹² For example, one question sets out the following scenario: "Each week, your mathematics teacher gives a short quiz. Recently you have

done badly on these quizzes. Today you are trying to figure out why." Is it luck? The teachers' level of interest? The difficulty of the course material? How students answer this question provides important clues to their view of themselves, their school work, and their teachers.¹³ The 2015 PISA emphasized science, which influenced both the academic content of the test as well as the student survey.¹⁴

School leaders receive an integrated, information-rich report that enables them to consider academic outcomes in the context of student-teacher relationships, student motivation, and student self-efficacy, and to compare their students' performance to peers around the world. The report also indicates whether students are performing better or worse than expected, given their socioeconomic standing. Essentially, the OECD Test for Schools functions like an index of factors that matter for student success, and allows educators to develop a road map for continuous change and improved student achievement.

That road map for improvement looks different in each school, and the following school system profiles illustrate how school leaders in three different jurisdictions use the OECD Test for Schools to monitor student academic outcomes and inform shifts in policy and teaching practice to meet students' learning needs. The three school systems—Gwinnett County Public Schools in Georgia, Granger Independent School District in Texas, and University Academy charter school in Missouri—could not be more different on the surface. Their school leaders, however, share a fierce commitment to preparing students for success in an increasingly globalized economy by focusing on real-world knowledge and real-world skills. Each profile explores their reasons for introducing the OECD Test for Schools; the process of implementation and review of data; benefits for students, teachers, and school administrators; and next steps that the schools and districts are taking.

Gwinnett County Public Schools (Georgia)

Gwinnett County Public Schools (GCPS) is the largest district in Georgia. Its twenty-one high schools serve more than 55,000 students, 69 percent of whom are students of color and 48 percent of whom qualify for free or reduced-price lunch. GCPS

received the \$1 million Broad Prize for Urban Education in 2010 and 2014 for its success in narrowing academic achievement gaps and promoting student success.¹⁵

GCPS learned about the OECD Test for Schools as a result of its collaboration with peer districts in the Large Countywide and Suburban District Consortium through AASA, the School Superintendents Association. According to Colin Martin, executive director of research and evaluation for GCPS, the district's reasons for signing up for the OECD Test for Schools were four-fold:

- understand, as a school community, what world-class performance looks like;
- familiarize teachers with international benchmarks that other countries are using;
- encourage the habit of not only understanding, but also applying, academic concepts to real-world scenarios; and
- leverage information gleaned from the OECD Test for Schools report to improve teaching and learning across the district.¹⁶



Photo courtesy of Gwinnett County Public Schools

GCPS piloted the OECD Test for Schools in 2014 with eleven of its high schools, and by 2016 had extended it to all twenty-one high schools in the district. The district does not make the OECD

Test for Schools reports public. Rather, district leaders carry the information gleaned from the reports into conversations with principals, curriculum leaders, and teachers. GCPS even hired one of the district's highly regarded former principals, John Campbell, to serve as the full-time OECD Test for Schools facilitator.

Throughout the year, GCPS works with the schools' curriculum directors to articulate the relationship between the state assessments (now known as Milestones) and the OECD Test for Schools. Campbell noted that he and the curriculum directors look at every publicly released question from the OECD's website, classify the questions into broad categories, and cross-walk them to the state standards. This matching exercise reassures teachers that using questions that are modeled on the framework used on PISA and the OECD Test for Schools will enhance rather than dilute their classroom instruction and their students' preparedness for state assessments.

The district also holds professional development sessions throughout the year on integrating PISA-style questions into instruction. Campbell explains, "The PISA approach invites constructed responses and deeper thinking in every subject area."¹⁷ As a consequence of this new vision and shared work, teachers have become comfortable using questions that mirror PISA's approach in their formative assessments. Taken together, the OECD Test for Schools has enabled a cultural shift in how GCPS principals and teachers view instruction. As Martin puts it, "Instruction has always been taboo for boards of education, superintendents, even principals to a large extent. That was the domain of the teacher. We say no; instructional practices matter [to all of us]."¹⁸

What are the district's next steps? Perhaps the most important is its plan to expand the OECD Test for Schools framework to middle school principals and teachers. The fifteen-year-olds who take the OECD Test for Schools are in their first year of high school, but their academic performance is largely a product of their middle school learning. Thus, for Campbell, a seminal goal is to familiarize middle school leaders with the format of PISA questions and their long-term benefits for student learning.¹⁹

Granger Independent School District (Texas)

Granger Independent School District (ISD) is one of Texas's smallest districts, serving a total of 421 students, 144 of whom are in high school. Its student body is 4 percent African American, 41 percent Latino, and 54 percent white. Fifty-seven percent of students qualify for free or reduced-price lunch. The district is academically strong, boasting (1) a 100 percent high school graduation rate three years in a row—School Years (SYs) 2013–14, 2014–15, and 2015–16—and (2) test scores that consistently meet or exceed the state average on the State of Texas Assessments of Academic Readiness (STAAR) and the SAT.

Granger ISD's students took the OECD Test for Schools for the first time in SY 2013–14. The district's participation came about because Superintendent Randy Willis, having just arrived from Houston in 2012, was "looking for progressive ways to lead the district to a new level." He met Peter Kannam, America Achieves' managing partner, who persuaded Willis that the OECD Test for Schools would offer a "new window onto student learning."²⁰



Photo courtesy of Granger Independent School District

From the vantage point of two years' experience, Willis concurs. The state assessments, he says, are geared to assess standards; the OECD Test for Schools asks students to "take what you learned and apply it to novel situations."²¹ What has this meant for Granger ISD?

In the first year (SY 2013–14), Granger's students scored slightly below the OECD's mean scores in reading and math on the main PISA, and slightly above in science.²² In the second year (SY 2014–15), Granger's students jumped ahead of the OECD mean scores in reading and science, and came close to closing the gap in math.²³ The OECD Test for Schools report offers extensive food for thought beyond the scores, which Willis brought to his seventeen high school teachers for reflection and response.

For instance, the OECD's reports create profiles of students' reading habits. How aware are students of effective learning strategies ("deep")? Do they read for pleasure? Do they read on a variety of subjects ("wide"), or are they "narrow" readers? In 2015, 46 percent of Granger ISD students fell in the most desirable category of "deep" readers, compared to only 30 percent of students in the United States. The comparative news was good, of course, but it also highlighted areas of weakness—the majority of students were surface readers—that teachers could then address in the classroom.

The OECD school reports and subsequent conversations have given teachers "a vision ... that deep learning should be relevant, and hands-on, and fun."²⁴ The PISA-style questions drive learning toward creative engagement, which influenced a recent procurement process: teachers evaluated science curricula with an eye toward their emphasis on practical application, not abstract knowledge. As a result, the high school invested in a slightly more expensive curriculum that included ready-made laboratory experiments.

Granger ISD also participates in America Achieves' Global Learning Network (the GLN), an organization for district leaders and educators who administer the OECD Test for Schools.²⁵ The GLN hosts national conferences and provides opportunities for leaders to interact with their peers around the world. The GLN's July 2014 newsletter features a report from Willis on his trip to Ankang, China, where he discussed educational initiatives with city leaders.²⁶

Willis is quick to note that Granger ISD's mean test scores may vary from year to year, but the benefits of the OECD Test for Schools are long-term. Preparing students to succeed in the twenty-first century means benchmarking test scores, mindsets, and academic habits with a standard that applies around the world. "Unless you have a world-class measure," he said, "you don't know if you have a world-class school."²⁷

University Academy (Kansas City, Missouri)

University Academy is a K–12, college-preparatory charter school in Missouri, where 99 percent of students are of color and 67 percent qualify for free or reduced-price lunch. The program is rigorous. The high school's 232 students must study math, science, social studies, and English every year, which is more rigorous than the state's graduation requirements. Furthermore, each student must master every unit of study before advancing to the next. Each quarter, students take a mastery test in every subject that is worth 40 percent of their grade. Students who miss the 80 percent mark have two additional chances to reach that level to demonstrate content mastery.

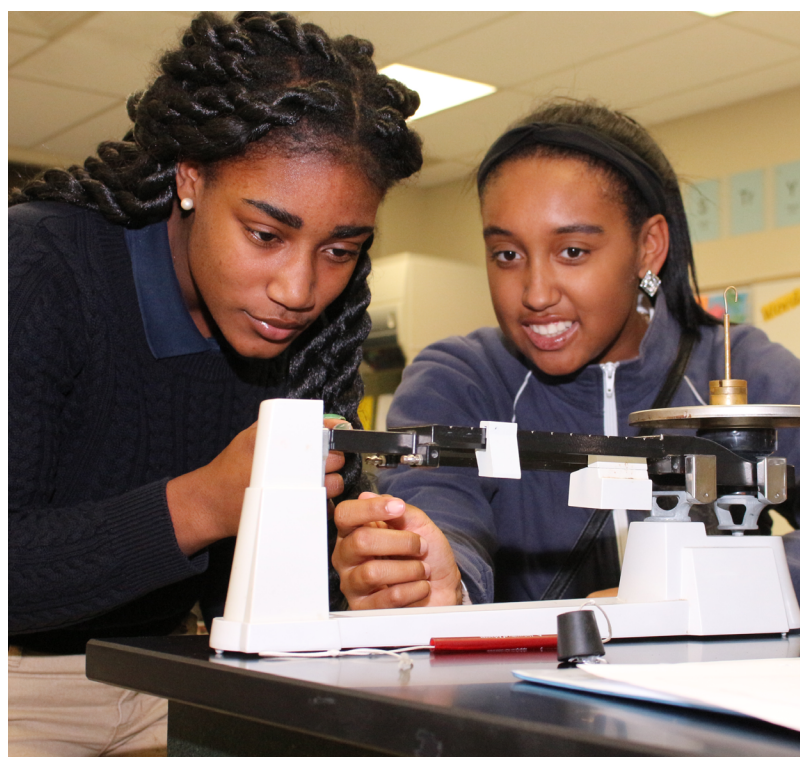


Photo courtesy of University Academy

Every teacher tutors twice a week for one hour to boost student success. University Academy's governing board further incentivizes students to achieve at high levels by awarding gift cards for achievement on state summative assessments—a practice that the board continues throughout graduates' college experience. For instance, when University Academy's high school graduates register in college, they receive a starter \$500 stipend. For every semester that their grade point average (GPA) is at least 2.5, they receive another \$500. If the GPA is at least 3.0, they receive an additional \$250—or \$750 total. If students earn a 3.5 GPA or higher, the board gives them \$1,000. Long-term high performance, in other words, is woven into the school's DNA.

What was the impetus behind the OECD Test for Schools? In SY 2014–15, the National Alliance for Public Charter Schools supported the cost of participation, and Principal Clem Ukaoma—and his teachers—agreed immediately. “Why pass up the chance to gauge our students' performance against schools in seventy-five other countries,” Ukaoma says.²⁸

Ukaoma called the first-year results “gruesome,” with not one student scoring in the top tier (level 6) in science. The students told him afterward that the test had been “really hard, and weird.” It was clear that the style of questioning had been unfamiliar to them.²⁹ One important finding from the survey was that students' “instrumental motivation to learn” was very high. “Instrumental motivation” refers to students' “sense of how important they see [the subject] in their own lives as they move on to further studies and the labor market,” and their belief “that their teachers have given them strategies to succeed and that their own efforts pay off.” The OECD considers instrumental motivation to be an important predictor for students' academic and vocational trajectories.³⁰ The finding that students already valued their academic course work and trusted their teachers' ability to impart vital skills for success was all the encouragement University Academy needed to bring more PISA-style questions into the classroom.

To this end, the school created resources for teachers that build on the OECD Test for Schools. One resource, “How Teachers Build Student Motivation in Math,” sets out a sample Algebra I student-teacher conversation about the long-term value of exponents. The student protests that she will never have to reduce exponents in real life, to which the teacher responds that, in the

short term, the mastery test requires understanding the concept but says the following about the long-term use:

I can't think of a career that would require you to do this by hand. The reason that you learn it is to develop your critical-thinking process. In any career or job that you have—yes, all of you at some point in your life will have a job—you will have to solve problems where you draw from a wide range of information That's just like how you solve this problem: you have to use a lot of properties, order of operations, and attention to detail. In a job like dance instructor, you have to apply the same process. Pull from a wide range of dance styles and moves, make formations that will be visually appealing, and reiterate until you get your final result. The thought process is a practice for how your brain will process information later in your life. That's why it's important to learn how to think about, approach, and solve problems in math.

The school also suggests online sources (such as YummyMath) that provide real-world problem-solving exercises that replicate the OECD Test for Schools approach, and distributes sample questions that teachers can deploy in their classrooms. One example (again, for Algebra I) asks students to use real-world population data from fifteen states to practice calculating percentages.

Such efforts seem to have paid off. In the school's second year (SY 2015–16) of administering the OECD Test for Schools, 9 percent of the students scored at a level 6 in science despite “major glitches” with the computerized (as opposed to paper-and-pencil) version of the test. University Academy has become known for its students' high levels of instrumental motivation and in October 2016, the Global Learning Network invited Ukaoma to address its members on this subject.³¹

Where does the school hope for impact in the coming years? In its elementary and middle school grades. Ukaoma has begun to engage principals from the lower divisions about what the OECD Test for Schools examines and ways the questions call for new depth and engagement in the classroom. In his words, “We get better simply by doing.”

Conclusion

Despite their different contexts, district and school leaders in Gwinnett, Granger, and Kansas City offer remarkably consistent messages about the OECD Test for Schools. The OECD Test for Schools provides clear messages about student success; elevates the culture of teaching and learning; and sets students on an internationally competitive academic and vocational path.

Research suggests that these leaders are right. The OECD finds “a reasonably close correlation” between students’ performance on the PISA and the shape of their adult lives.³² Its Survey of Adult Skills assesses the reading and math skills of adults ages sixteen to sixty-four, including how well they solve novel problems, how subtle their reasoning is, how adept they are at communicating, and how involved they are in their communities. After controlling for background factors, adults who score a 4 or 5 (out of 5) in literacy on the survey are nearly three times as likely as their peers to earn above a median wage, two and a half times as likely to feel politically effective, and twice as likely to be in good health and to trust others.³³ Furthermore, the OECD finds that country-level performance on PISA in a given year (e.g., 2000) is predictive of performance among the relevant age cohort (e.g., twenty-seven-year-olds).³⁴

Simply put, higher levels of reading and math literacy correlate to healthier, better-off, more socially mobile, and more socially active adults across their lifetimes. The basic skills, knowledge, and competencies assessed by PISA matter, and not only in economic ways, but in ways that impact the quality of life open to students.

The OECD Test for Schools takes on even greater value in this light. Its multifaceted reports provide school leaders vital and actionable data that can be translated into high-powered teaching and learning, improved student performance, and more satisfying life outcomes. For traditionally underserved students in particular, the OECD Test for Schools can make a world of difference.



Photo courtesy of Gwinnett County Public Schools

Endnotes

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