Report

HOWARD COUNTY
PUBLIC SCHOOL SYSTEM

BOARD OF EDUCATION OF HOWARD COUNTY
MEETING AGENDA ITEM

TITLE: OECD Test for Schools **DATE:** October 23, 2014

PRESENTER(S):

Frank V. Eastham, Executive Director School Improvement and Administration	Gina Massella Principal, Howard High School
Vasuki Rethinam, Coordinator, Research	Scott Ruehl Principal, Mount Hebron High School
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VISION 2018 GOAL: ☒ Students ☒ Staff ☒ Families and Community ☒ Organization

OVERVIEW:

Rigorous academic content and instruction and the development of critical college and career-readiness skills are imperative in order for our students to be successful in the globally competitive 21st century.

- Outcome 1.1: The instructional program is rigorous, globally-relevant, and aligned with international and/or nationally recognized college and career-ready standards.
- Outcome 2.2: Staff members have access to learning experiences that support their professional growth.
- Outcome 3.2: HCPSS is strengthened through partnerships.
- Outcome 4.6: Decisions are informed by relevant data in all operational areas.

The Organisation for Economic Cooperation and Development (OECD) provides a benchmarking assessment entitled the Programme for International Student Assessment (PISA). PISA is designed to provide national results with international comparisons. OECD also provides the OECD Test for Schools, which is designed to yield school-level results for benchmarking and school improvement. Both tools measure how well students perform in reading, mathematics, and science; in addition, both feature a student survey that reveals student insights about student engagement and school culture. During the 2013-14 school year, a random sampling fifteen year-old students in each of the HCPSS high schools participated in the OECD Test for Schools. Each school has received a detailed report to help schools leverage results to provide professional learning and improve practices.

RECOMMENDATION/FUTURE DIRECTION:

1. Use results for school improvement planning to link 21st century skills, global competencies and deeper learning.
2. Build structures for vertical and horizontal collaboration to promote conceptual learning and a growth mindset.
3. Engage students in authentic learning experiences to solve real-world problems through performance-based tasks.

Submitted by:

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BACKGROUND of PISA and OECD

Schools, districts and communities have historically assessed student performance based on state and national standards. In today's global economy, international benchmarking expands the opportunity to make comparisons with the best performing schools and education systems around the world. The OECD (Organisation for Economic Cooperation and Development) creates the PISA (Programme for International Student Assessment). The test and the survey are administered every three years to evaluate worldwide education systems in terms of quality, equity and efficiency by testing the skills and knowledge of 15 year-old students. Since 2000, PISA has provided assessment data about how 15-year old students in 70 countries and economies perform in reading, mathematics, and science. These countries and economies make up nine-tenths of the world economy, and test results reveal differences in educational outcomes. In less than a decade, countries like Korea have doubled the number of students demonstrating excellence. The distinguished success of the Shanghai-China economy demonstrates how success can be achieved in a diverse social context. Poland overhauled its entire education system to turn around lowest-performing schools and raise overall performance.

PISA 2012 marks the programme's 5th administration. In 2012 students from 44 of the participating countries and economies took part in an optional assessment of creative problem-solving and in 18 countries and economies, students took a financial literacy assessment. The data collected provides valuable information about how students and schools compare internationally and about why some countries are more successful preparing their students for success. Overall approximately 510,000 students between the ages of 15 years 3 months and 16 years 2 months, representing about 28 million 15 year-olds globally, participated in PISA 2012. The next administration of PISA will take place in 2015.

The PISA test is a 2-3 hour paper test with an assortment of multiple choice and open-ended questions designed to determine to what extent students can apply their knowledge and be equipped for full participation in society. Combinations of different tests are offered in each administration. Students and school administrators also answer questions about students' backgrounds, school and learning experiences, and the broader school system, which assist in the interpretation of results.

The results yield aggregate distributions to examine strengths and weaknesses in the performance of American students. Researchers also have been reviewing the relationship between Common Core State Standards and international standards. Data in turn can inform instruction and improve performance. The 2012 PISA reports indicate that the United States ranked 26th in mathematics, 17th in reading, and 21st in science. The United States differs from other nations because it does not measure the performance of states individually, although Florida, Massachusetts, and Connecticut are oversampled to give some state-level results. However, based on progress over time, student performance is the United States is relatively stagnant. Many schools in the United States want to go further than a national comparison and are electing to understand how individual schools perform next to the world's leading school systems.

OVERVIEW of OECD Test for Schools

Similar to the international PISA assessment, the OECD Test for Schools is a voluntary, no-stakes assessment. It offers a powerful resource for improving individual schools and school systems across the country. The test measures deep conceptual understanding in reading, mathematics, and science, as well as applied learning in novel situations that require problem-solving and critical thinking. The results, in turn, provide an opportunity for individual high schools throughout the United States to benchmark student performance against student

performance internationally. The survey of student attitudes about learning and student opinions about the school culture adds rich meaning and key insights into student engagement and student perceptions. This global benchmarking tool complements *Vision 2018: Every student is **inspired** to learn and **empowered** to excel*. It emphasizes key outcomes for a rigorous and globally-relevant program which is aligned with international and/or national college and career-readiness standards.

In 2012 America Achieves, a non-profit organization committed to helping communities prepare for success in college, career, and citizenship, partnered with OECD to pilot the OECD test for schools in the United States. The pilot included over 100 schools and more than 7,500 students in 22 states and 48 school districts in the United States, plus additional schools in the United Kingdom and Canada. The 3.5 hour test and survey are not designed to be a high-stakes assessment focused on a particular set of standards, but results are intended to be a diagnostic measure for high schools and educators that can inform curriculum, teacher development and school culture. Following a successful pilot, the OECD Test for Schools became available to every high school in America in 2013 and America Achieves is currently launching a Global Learning Network (GLN) to foster a professional learning community of school leaders to help educators focus continuous improvement efforts and better communicate about how to leverage instructional practices to impact competitive student results.

OECD Test for Schools in HCPSS

In the fall of 2013, HCPSS registered each of the twelve high schools for participation in the OECD Test for Schools. Carolyn Trager Kliman, Director of the Global Learning Network, and Peter Kannam, Managing Partner for America Achieves, worked with HCPSS staff to prepare a presentation for high school principals that took place on December 4, 2013. Key benefits of participation were shared:

- International benchmark for individual schools
- Learning tools to provide diagnostic measures and best practice resources
- Deep learning concepts
- Detailed 100+ page report with student survey data
- Global Learning Network with virtual and face-to-face convening conferences for world-leading schools

Each school appointed an assistant principal to assist with logistics such as student notification, testing locations, and security of materials; however CTB/McGraw Hill provided all testing materials and testing proctors. HCPSS identified a testing window between February 18-Februray 27, 2014. To ensure comparable results, a sample of 85 students from each school was randomly selected by CTB/McGraw Hill; both the Division of Accountability and CTB/McGraw Hill reviewed allowable accommodations. Parents received a letter which explained their child's random selection, the purpose of the assessment that would report only school-level results, and the option to exempt their child. School administrators met with students to explain the importance of the assessment and their valuable role in representing the school. Students were excused from class assignments on the day of the test. Student participation ranged from 52-74 students at individual schools, which was considered a valid sampling size.

School level results are reported in a comprehensive 100+ page report:

- A guide to help school leaders and teachers understand school measures, proficiency levels, and results

- Information about what students at the school know and can do in reading, mathematics, and science
- Survey results that describe the learning environment as well as student habits, beliefs and attitudes
- Comparison with similar schools in the United States
- Context of international benchmark comparisons

School principals and district leaders attended the Convening of World-Leading Schools September 28-29, 2014 in Washington, DC as part of the Global Learning Network. The keynote address featured Amanda Ripley, author of *The Smartest Kids in the World: And How They Got That Way* and key lessons in a global context shared by Andreas Schleicher, statistician, researcher, and Division Head of the OECD Programme for International Student Assessment. Conference sessions included a focus on data empowerment, practice shifts, project-based learning, instructional strategies for deeper learning, positive climate for learning, and raising expectations. In 2015, America Achieves and Great Schools.org will partner to enable schools to showcase their participation in the OECD Test for Schools. For schools that wish to have their participation recognized, the school profile will include an OECD badge to highlight the school's commitment to high standards, rigorous academic content, and the acquisition of critical thinking, problem-solving and analytical skills. For schools that wish to share results, the presentation of data will build awareness of school performance in a global context.

Core Subject Area Results (Mean Scores)
Information on the mean performance for students in the 12 Howard County Public School System (HCPSS) high schools that participated in the OECD Test for Schools is detailed in Table A1 as an appendix. By participating in the OECD Test for Schools assessment, school results can be compared with the results from the international PISA assessment that were conducted around the world. The comparisons were made using PISA 2009 because these data were available at the time of release of the 2013 OECD Test for Schools results.

Reading
In reading, the mean performance for students in the twelve HCPSS high schools that participated in the OECD Test for Schools ranged between 560 and 478 (Table 1). Table 1 shows the international comparison in reading. Shanghai-China (an economy) was the highest performing school system in PISA 2009 reading with a mean score of 556. The top four highest performing countries in PISA 2009 reading were Korea (539), Finland (536), Singapore (526), and Canada (524). One of the twelve HCPSS schools outperformed the highest performing school system (Shanghai-China) in PISA 2009 reading. Seven HCPSS schools outperformed the top-ranked countries in reading. Eleven of the HCPSS schools scored above the mean performance obtained by students across schools in the United States in PISA 2009 (500 points). (While making comparisons, the reader should note that Shanghai-China is an economy; Korea, Finland, Singapore, and Canada are countries that participated in the assessment.)

Table 1. Average Reading Scores of 15-Year-Old Students on OECD Test for Schools/PISA 2009 by Education System

Reading 2009 PISA	Mean	SE		Reading 2009 PISA	Mean	SE		Reading 2009 PISA	Mean	SE
Centennial	560	11.4		Iceland	500	1.4		Turkey	464	3.5
Shanghai-China	556	2.4		United States	500	3.7		Dubai (UAE)	459	1.1
Marriotts Ridge	548	11.7		Liechtenstein	499	2.8		Russian Federation	459	3.3
River Hill	548	13.1		Sweden	497	2.9		Chile	449	3.1
Glenelg	547	16.5		Germany	497	2.7		Serbia	442	2.4
Howard	546	12.5		Ireland	496	3.0		Bulgaria	429	6.7
Atholton	544	15.9		France	496	3.4		Uruguay	426	2.6
Mount Hebron	540	13.9		Chinese Taipei	495	2.6		Mexico	425	2.0
Korea	539	3.5		Denmark	495	2.1		Romania	424	4.1
Finland	536	2.3		United Kingdom	494	2.3		Thailand	421	2.6
Hong Kong-China	533	2.1		Hungary	494	3.2		Trinidad and Tobago	416	1.2
Singapore	526	1.1		Portugal	489	3.1		Colombia	413	3.7
Canada	524	1.5		Macao-China	487	0.9		Brazil	412	2.7
New Zealand	521	2.4		Italy	486	1.6		Montenegro	408	1.7
Japan	520	3.5		Latvia	484	3.0		Jordan	405	3.3
Reservoir	515	11.1		Slovenia	483	1.0		Tunisia	404	2.9
Australia	515	2.3		Greece	483	4.3		Indonesia	402	3.7
Hammond	514	12.2		Spain	481	2.0		Argentina	398	4.6
Wilde Lake	512	12.8		Czech Republic	478	2.9		Kazakhstan	390	3.1
Netherlands	508	5.1		Oakland Mills	478	12.4		Albania	385	4.0
Belgium	506	2.3		Slovak Republic	477	2.5		Qatar	372	0.8
Norway	503	2.6		Croatia	476	2.9		Panama	371	6.5
Long Reach	501	13.4		Israel	474	3.6		Peru	370	4.0
Estonia	501	2.6		Luxembourg	472	1.3		Azerbaijan	362	3.3
Switzerland	501	2.4		Austria	470	2.9		Kyrgyzstan	314	3.2
Poland	500	2.6		Lithuania	468	2.4				

Note: Education systems are ordered by mean score. The blue highlights are Howard County Public Schools (HCPSS), MD that participated in the OECD Test for Schools. No highlights and green highlights are countries and economies that participated in PISA 2009. The standard errors (s.e.) are larger in the HCPSS schools (sample sizes are relatively small) compared to countries and economies (sample sizes are much larger). Therefore differences between average scores must be interpreted with care due to the relatively large margin of error surrounding the estimate for HCPSS schools.

In mathematics, the mean performance for students in the twelve HCPSS high schools that participated in the OECD Test for Schools ranged between 574 and 452 (Table 2). Table 2 shows the international comparison in mathematics. Shanghai-China (an economy) was the highest performing school system in PISA 2009 mathematics with a mean score of 600. The top three highest performing countries in PISA 2009 mathematics were Singapore (562), Korea (546), and Finland (541). Seven HCPSS schools outperformed Finland in mathematics. Ten HCPSS schools scored above the mean performance obtained by students across schools in the United States in PISA 2009 (487 points).

Table 2. Average Mathematics Scores of 15-Year-Old Students on OECD Test for Schools/PISA 2009 by Education System

Math 2009 PISA	Mean	SE		Math 2009 PISA	Mean	SE		Math 2009 PISA	Mean	SE
Shanghai-China	600	2.8		Iceland	507	1.4		Oakland Mills	452	14.6
Glenelg	574	14.6		Denmark	503	2.6		Israel	447	3.3
River Hill	574	16.9		Slovenia	501	1.2		Turkey	445	4.4
Centennial	567	13.1		Norway	498	2.4		Serbia	442	2.9
Singapore	562	1.4		France	497	3.1		Azerbaijan	431	2.8
Atholton	558	10.8		Slovak Republic	497	3.1		Bulgaria	428	5.9
Hong Kong-China	555	2.7		Austria	496	2.7		Romania	427	3.4
Marriotts Ridge	553	13.1		Long Reach	495	12.6		Uruguay	427	2.6
Korea	546	4.0		Poland	495	2.8		Chile	421	3.1
Mount Hebron	545	13.0		Sweden	494	2.9		Thailand	419	3.2
Chinese Taipei	543	3.4		Czech Republic	493	2.8		Mexico	419	1.8
Howard	542	13.1		United Kingdom	492	2.4		Trinidad and Tobago	414	1.3
Finland	541	2.2		Hungary	490	3.5		Kazakhstan	405	3.0
Liechtenstein	536	4.1		Luxembourg	489	1.2		Montenegro	403	2.0
Switzerland	534	3.3		United States	487	3.6		Argentina	388	4.1
Japan	529	3.3		Ireland	487	2.5		Jordan	387	3.7
Canada	527	1.6		Portugal	487	2.9		Brazil	386	2.4
Netherlands	526	4.7		Spain	483	2.1		Colombia	381	3.2
Reservoir	525	11.8		Italy	483	1.9		Albania	377	4.0
Macao-China	525	0.9		Latvia	482	3.1		Tunisia	371	3.0
New Zealand	519	2.3		Wilde Lake	481	13.3		Indonesia	371	3.7
Belgium	515	2.3		Lithuania	477	2.6		Qatar	368	0.7
Australia	514	2.5		Russian Federation	468	3.3		Peru	365	4.0
Germany	513	2.9		Greece	466	3.9		Panama	360	5.2
Estonia	512	2.6		Croatia	460	3.1		Kyrgyzstan	331	2.9
Hammond	508	12.5		Dubai (UAE)	453	1.1				

Note: Education systems are ordered by mean score. The blue highlights are Howard County Public Schools (HCPSS), MD that participated in the OECD Test for Schools. No highlights and green highlights are countries and economies that participated in PISA 2009. The standard errors (s.e.) are larger in the HCPSS schools (sample sizes are relatively small) compared to countries and economies (sample sizes are much larger). Therefore differences between average scores must be interpreted with care due to the relatively large margin of error surrounding the estimate for HCPSS schools.

Science

In science, the mean performance for students in the twelve HCPSS high schools that participated in the OECD Test for Schools ranged between 567 and 499 (Table 3). Table 3 shows the international comparison in science. Shanghai-China (an economy) was the highest performing school system in PISA 2009 science with a mean score of 575. The top four highest performing countries in PISA 2009 science were Finland (554), Singapore (542), Japan (539), and Korea (538). None of the twelve HCPSS schools outperformed the highest performing school system (Shanghai-China) in PISA 2009 science. Seven HCPSS schools outperformed Singapore, Japan, and Korea in science. Eleven HCPSS schools scored above the mean performance obtained by students across schools in the United States in PISA 2009 (502 points).

Table 3. Average Science Scores of 15-Year-Old Students on OECD Test for Schools/PISA 2009 by Education System

Science 2009 PISA	Mean	SE		Science 2009 PISA	Mean	SE		Science 2009 PISA	Mean	SE
Shanghai-China	575	2.3		Slovenia	512	1.1		Dubai (UAE)	466	1.2
Glenelg	567	11.5		Macao-China	511	1.0		Israel	455	3.1
River Hill	562	12.0		Long Reach	511	12.0		Turkey	454	3.6
Centennial	557	10.3		Poland	508	2.4		Chile	447	2.9
Atholton	555	11.6		Ireland	508	3.3		Serbia	443	2.4
Finland	554	2.3		Belgium	507	2.5		Bulgaria	439	5.9
Marriotts Ridge	553	11.1		Hungary	503	3.1		Romania	428	3.4
Howard	550	11.8		United States	502	3.6		Uruguay	427	2.6
Hong Kong-China	549	2.8		Czech Republic	500	3.0		Thailand	425	3.0
Mount Hebron	548	12.7		Norway	500	2.6		Mexico	416	1.8
Singapore	542	1.4		Denmark	499	2.5		Jordan	415	3.5
Japan	539	3.4		Oakland Mills	499	14.5		Trinidad and Tobago	410	1.2
Korea	538	3.4		France	498	3.6		Brazil	405	2.4
New Zealand	532	2.6		Iceland	496	1.4		Colombia	402	3.6
Canada	529	1.6		Sweden	495	2.7		Montenegro	401	2.0
Estonia	528	2.7		Austria	494	3.2		Argentina	401	4.6
Australia	527	2.5		Latvia	494	3.1		Tunisia	401	2.7
Netherlands	522	5.4		Portugal	493	2.9		Kazakhstan	400	3.1
Reservoir	522	10.0		Lithuania	491	2.9		Albania	391	3.9
Chinese Taipei	520	2.6		Slovak Republic	490	3.0		Indonesia	383	3.8
Germany	520	2.8		Italy	489	1.8		Qatar	379	0.9
Liechtenstein	520	3.4		Spain	488	2.1		Panama	376	5.7
Hammond	520	10.0		Croatia	486	2.8		Azerbaijan	373	3.1
Switzerland	517	2.8		Luxembourg	484	1.2		Peru	369	3.5
United Kingdom	514	2.5		Russian Federation	478	3.3		Kyrgyzstan	330	2.9
Wilde Lake	512	10.4		Greece	470	4.0				

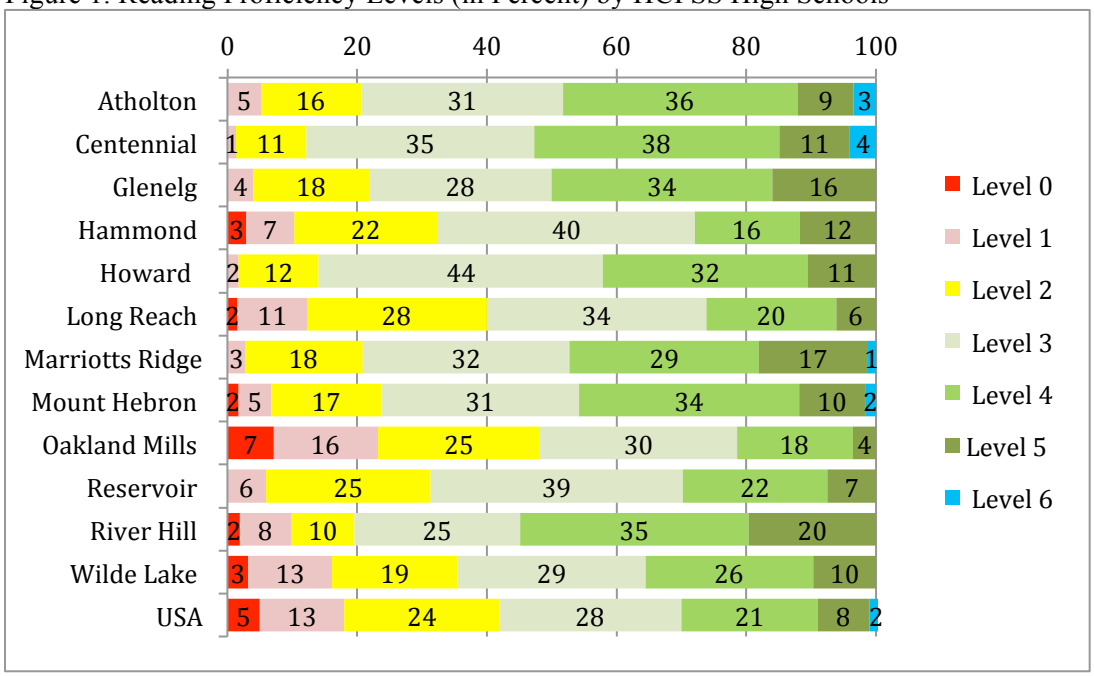
Note: Education systems are ordered by mean score. The blue highlights are Howard County Public Schools (HCPSS), MD that participated in the OECD Test for Schools. No highlights and green highlights are countries and economies that participated in PISA 2009. The standard errors (s.e.) are larger in the HCPSS schools (sample sizes are relatively small) compared to countries and economies (sample sizes are much larger). Therefore differences between average scores must be interpreted with care due to the relatively large margin of error surrounding the estimate for HCPSS schools.

Core Subject Area Results (Proficiency Levels)

Depending on the tasks that students are able to successfully respond to in reading, math, and science, students can be grouped into six levels of proficiency. Students below Level 1 do not have the skills necessary to enter the labor market. Level 2 is an important threshold, as PISA considers it to be a baseline level of proficiency at which students begins to demonstrate the competencies that will enable them to participate effectively and productively in life as successful students, workers, and citizens. At the upper end of performance, Levels 5 and 6 are the highest levels of proficiency in PISA and are considered to be "world class" and highly competitive.

The following section displays proficiency levels by HCPSS high schools and the United States. in reading, math, and science. Figure 1 shows the reading proficiency levels for HCPSS schools and the United States. 18% of 15-year-olds in the United States do not reach the baseline Level 2 of reading proficiency. Only10% of students in the United States reached Level 5 and above.

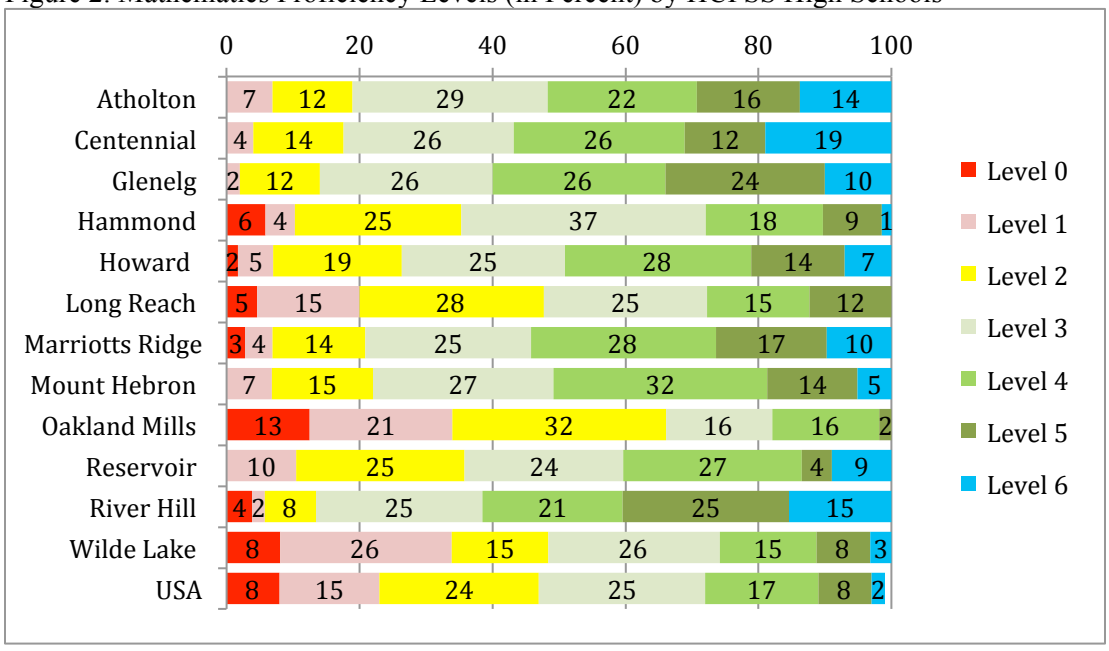
Figure 1. Reading Proficiency Levels (in Percent) by HCPSS High Schools



Note: Level 2 is an important threshold, as PISA considers it to be a baseline level of proficiency where students begin to demonstrate competencies that will enable them to participate effectively and productively in life as continuing students, workers, and citizens. At the upper end of performance, Levels 5 and 6 are the highest levels of proficiency in PISA and are considered "world class".

Figure 2 shows the mathematics proficiency levels for HCPSS schools and the United States. 23% of 15-year-olds in the United States do not reach baseline Level 2 of mathematics proficiency. Only 10% of the students in the United States reached Level 5 and above.

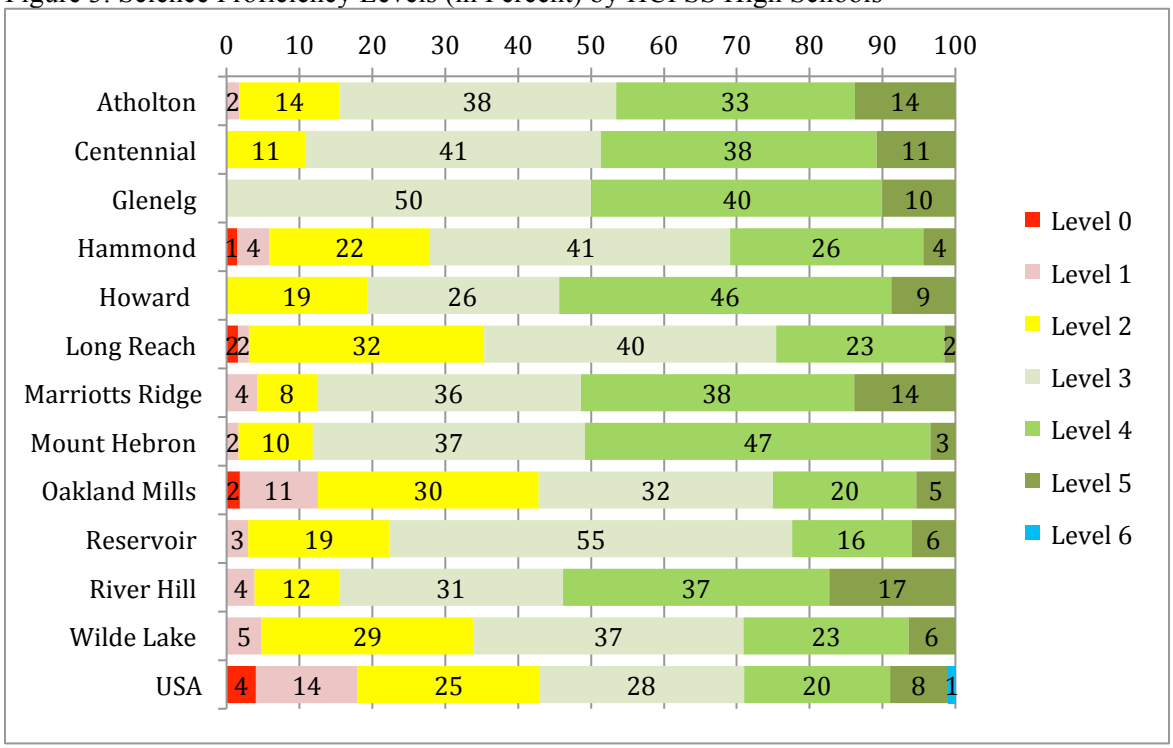
Figure 2. Mathematics Proficiency Levels (in Percent) by HCPSS High Schools



Note: Level 2 is an important threshold, as PISA considers it to be a baseline level of proficiency where students begin to demonstrate competencies that will enable them to participate effectively and productively in life as continuing students, workers, and citizens. At the upper end of performance, Levels 5 and 6 are the highest levels of proficiency in PISA and are considered "world class".

Figure 3 shows the science proficiency levels for HCPSS schools and the United States. 18% of 15-year-olds in the United States do not reach the baseline Level 2 of science proficiency. Only 9% of the students in the United States reached Level 5 and above.

Figure 3. Science Proficiency Levels (in Percent) by HCPSS High Schools



Note: Level 2 is an important threshold, as PISA considers it to be a baseline level of proficiency where students begin to demonstrate competencies that will enable them to participate effectively and productively in life as continuing students, workers, and citizens. At the upper end of performance, Levels 5 and 6 are the highest levels of proficiency in PISA and are considered "world class".

School Climate and Culture Survey Results

A benefit of the OECD Test for Schools is that it provides information on classroom climate and culture measures that research has shown to be closely associated with student learning. The results also provide information on student engagement. The measures in this report include:

- Reader profile
- Classroom learning environment
- Teacher-student relationship
- Student instrumental motivation and self-efficacy

Reader Profile

Students fall into six reader profiles. Figure 4 shows a description of the six reader profiles. Students who are "deep and wide readers" (the top-right corner on the figure) have a deep understanding of the most effective learning strategies – as determined by reading experts – and they also read a wide variety of materials for enjoyment. In the opposite corner of the figure, students who are "surface and highly restricted readers" have a poor understanding of the most effective learning strategies and they only spend little time reading any type of printed material for enjoyment.

Figure 4. Description of Six Reader Profiles

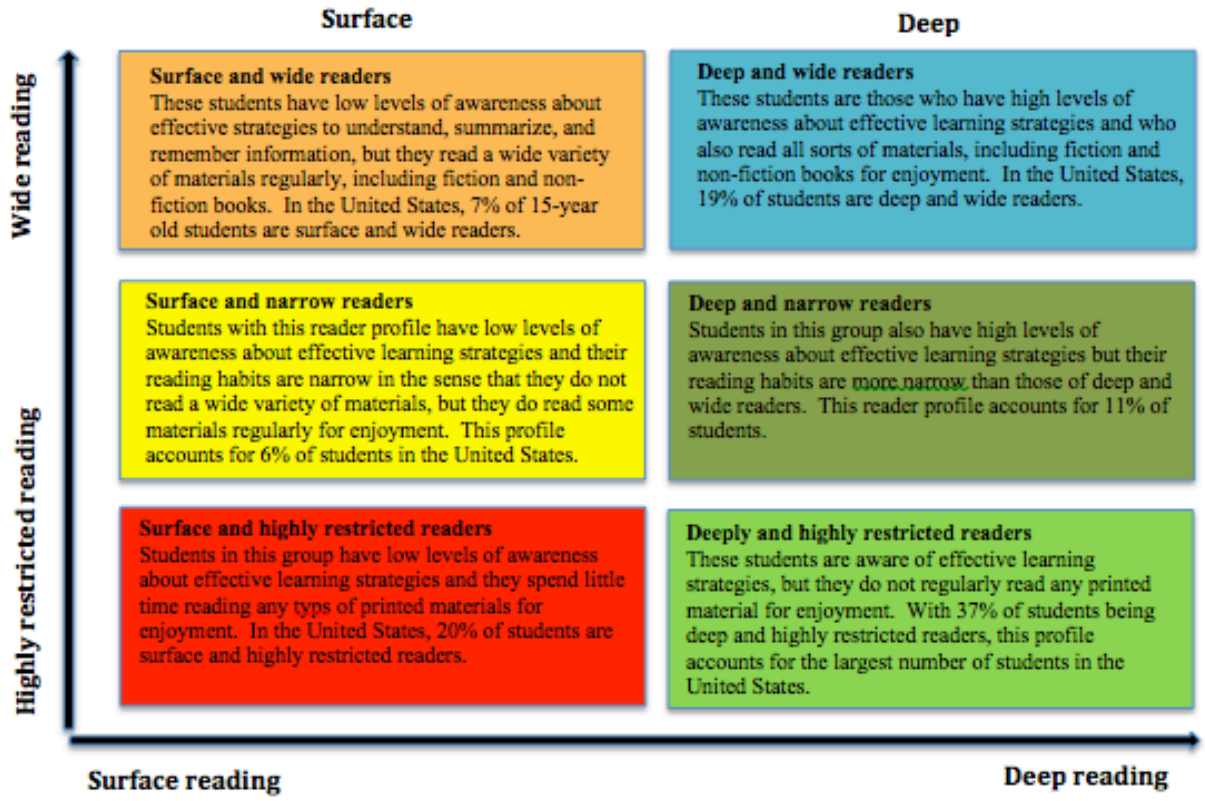
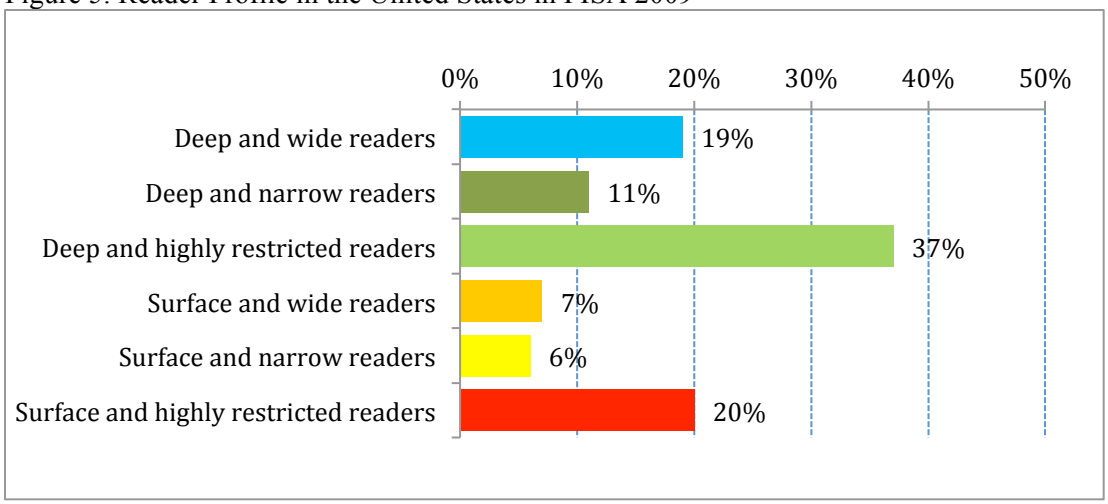


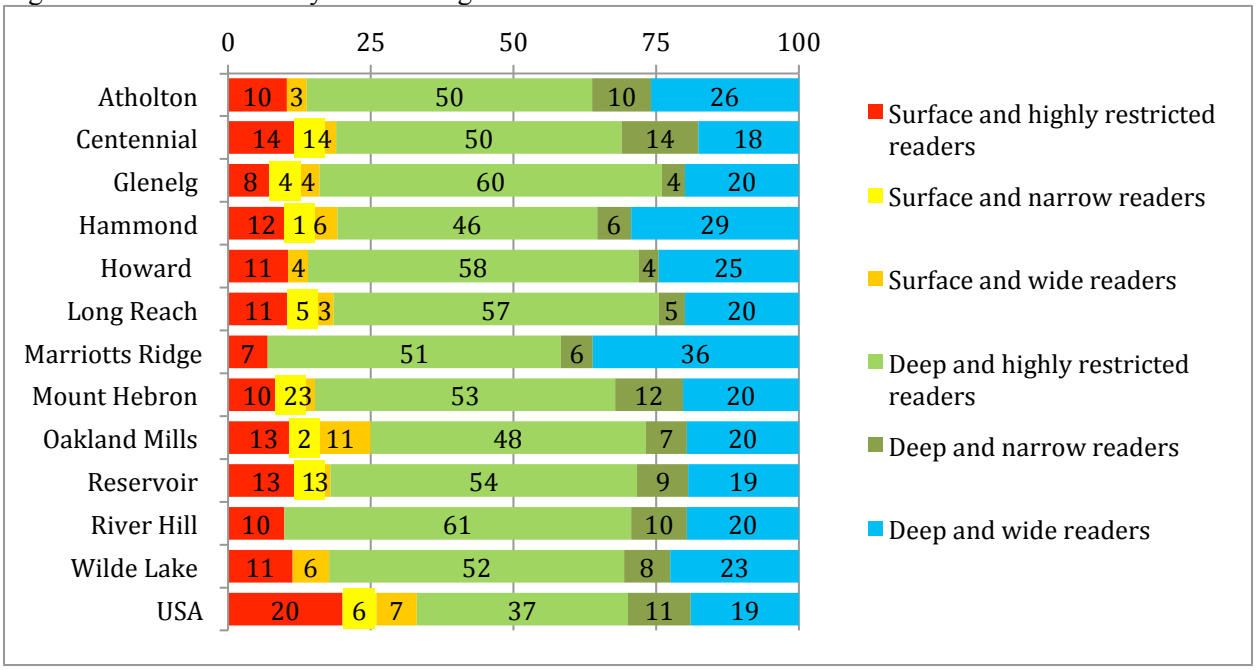
Figure 5 shows the percentage of students in each category of reader profiles in the United States. In the United States, 20% of students are "surface and highly restricted readers". 37% of the students in the United States are "deep and highly restricted readers" accounting for the largest number of students. 19% of the United States students are "deep and wide readers".

Figure 5. Reader Profile in the United States in PISA 2009



A similar trend is found for students in these six reader categories across HCPSS high schools. "Deep and highly restricted readers" account for the largest percent of students in HCPSS (Figure 6).

Figure 6. Reader Profile by HCPSS High Schools



Classroom Learning Environment

PISA shows that a strong learning environment at a school is consistently associated with better student performance when comparing students' performance within the country. Looking at school systems across the world, students tend to perform better when classrooms are well disciplined and relationships between students and teachers are amiable and supportive. Students responded to five questions on the learning environment in their English and mathematics classes. The survey items are presented in Figures 7 and 8 for English and mathematics respectively. The majority of students in the United States enjoy orderly classrooms in their English and mathematics classes. About 80% of students report that they "never" or "only in some lessons" think that students don't start working for a long time after the lesson begins or that noise "never" or "only in some lessons" affects learning. Figures 7 and 8 are ***samples*** of one HCPSS high school's results, as presented in an individual school report.

Figure 7. English Classroom Climate: Percent reporting **Hardly Ever** or **Never** (HCPSS ***SAMPLE***)

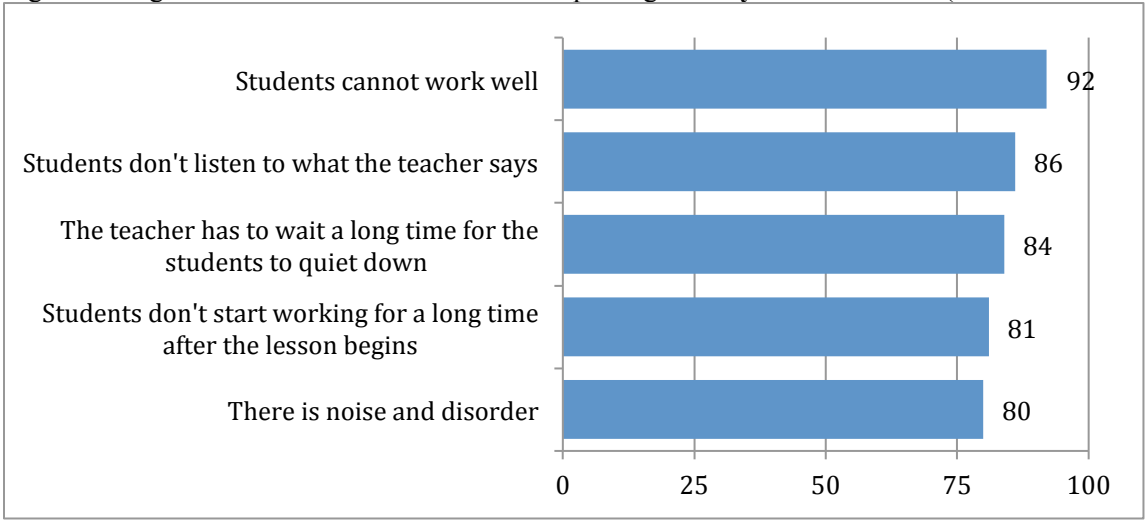
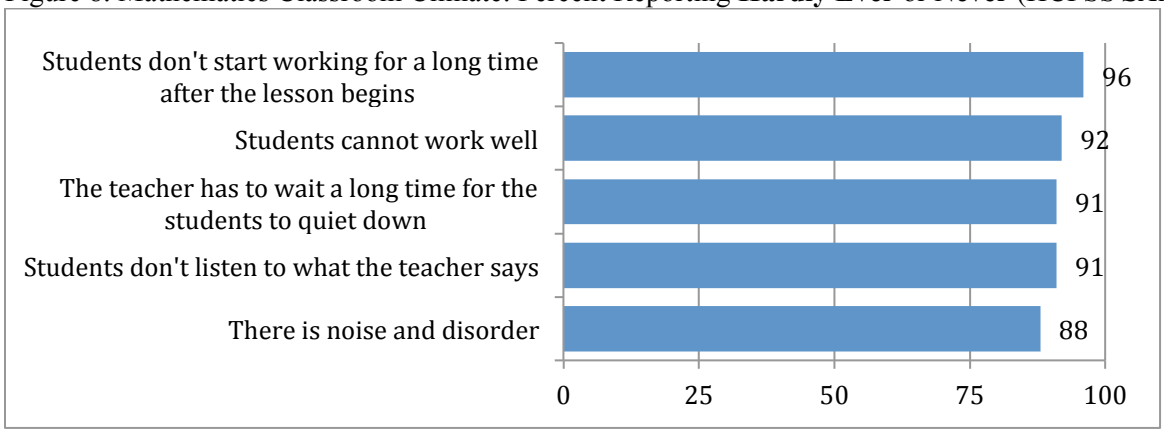


Figure 8. Mathematics Classroom Climate: Percent Reporting **Hardly Ever** or **Never** (HCPSS ***SAMPLE***)

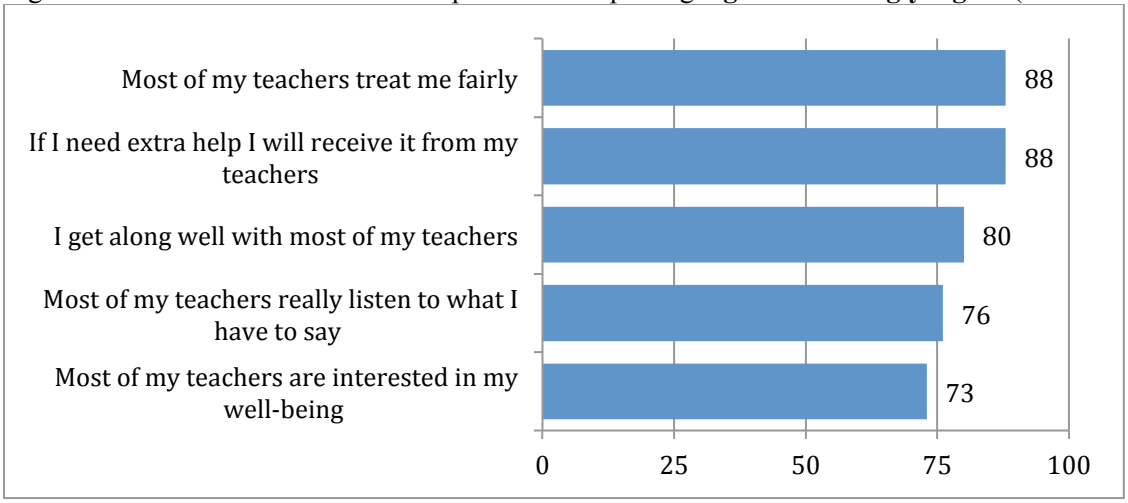


Note that these figures are SAMPLE data charts that illustrate how the information is presented for each individual high school in the school reports. The text highlights average findings from the relevant PISA data.

Teacher-Student Relationship

Along with learning environment, teacher-student relationships at a school are a key element of the learning environment that is positively associated with student performance. The survey consisted of five items (Figure 9) and shows the extent to which students "agree" or "strongly agree" with the statements regarding their relationship with teachers. In PISA 2009 students from more than 70 countries and economies were asked the same questions about their teacher-student relationships. On average across OECD countries, 85% of students report that they "agree" or "strongly agree" that they get along well with most of their teachers. In the United States the figures are even higher, with 90% of students agreeing that they get along well with most of their teachers.

Figure 9. Teacher-Student Relationship: Percent Reporting **Agree** or **Strongly Agree** (HCPSS ***SAMPLE***)



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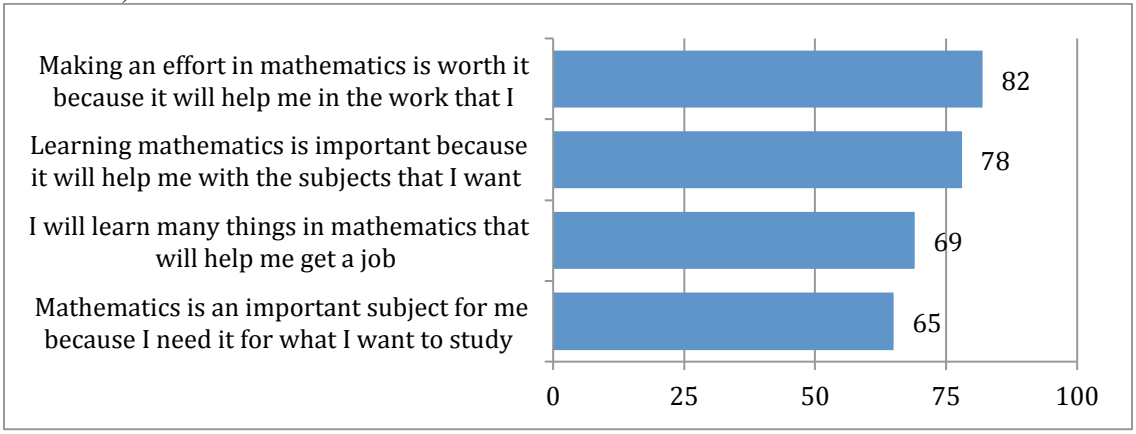
Student Instrumental Motivation in Math

There is a strong relationship between students' attitudes toward math and their math performance. Students responded to four questions regarding their motivation to learn mathematics (Figure 10). The questions focus on the students' *instrumental motivation* in the sense of how important they see mathematics in their own lives as they move on to further studies and the labor market. In PISA 2012, across the UNITED STATES, 81% of students agree or strongly agree that "making an effort in mathematics is worth it because it will help me in the work that I want to do later;" 80% agree or strongly agree that "learning mathematics is important because it will help me with the subjects that I want to study further on in school;" 70% agree or strongly agree that "mathematics is an important subject for me because I need it for what I want to study later on;" and 80% agree or strongly agree that "I will learn many things in mathematics that will help me get a job."

Figure 10. Instrumental Motivation Math: Percent Reporting **Agree** or **Strongly Agree** (HCPSS ***SAMPLE***)



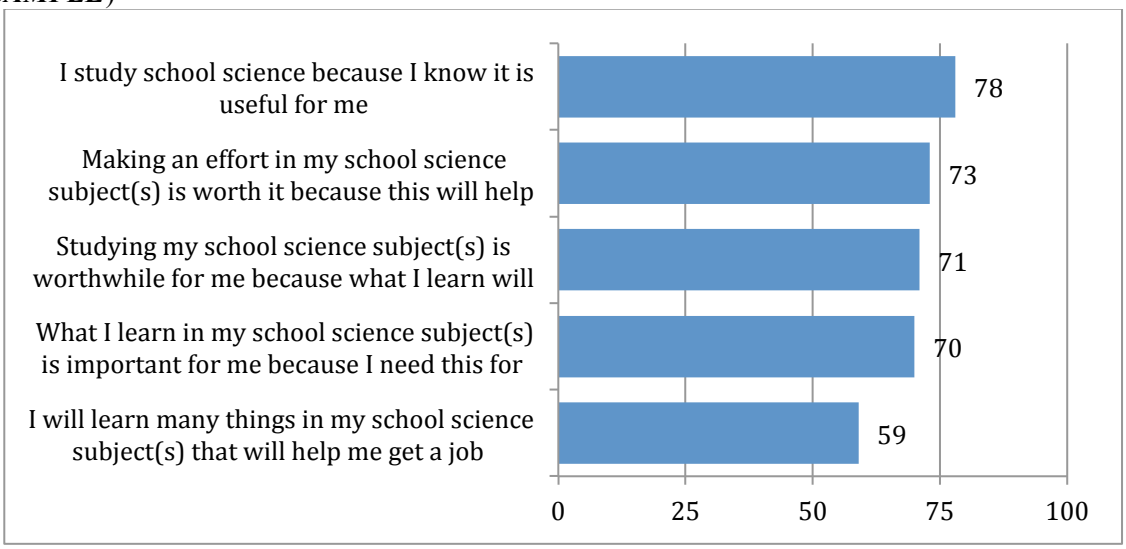
Note that these figures are SAMPLE data charts that illustrate how the information is presented for each individual high school in the school reports. The text highlights average findings from the relevant PISA data.

Student Instrumental Motivation in Science

Students responded to five questions regarding their motivation to learn science (Figure 11). The questions focus on students' instrumental motivation in the sense of how important they see science for their own lives as they move on to further studies and the labor market.

In PISA 2006 when science was the main focus of the assessment, across the United States, 77% of students agree or strongly agree with the statement "I study school science because I know it is useful for me;" 78% agree or strongly agree that "making an effort in my school science subject(s) is worth it because this will help me in the work I want to do later on;" 70% agree or strongly agree that "studying my school science subject(s) is worthwhile for me because what I learn will improve my career prospects;" 70% agree or strongly agree with "I will learn many things in my school science subject(s) that will help me get a job;" and 68% agree or strongly agree with "What I learn in my school science subject(s) is important for me because I need this for what I want to study later on."

Figure 11. Instrumental Motivation Science: Percent Reporting **Agree** or **Strongly Agree** (HCPSS ***SAMPLE***)



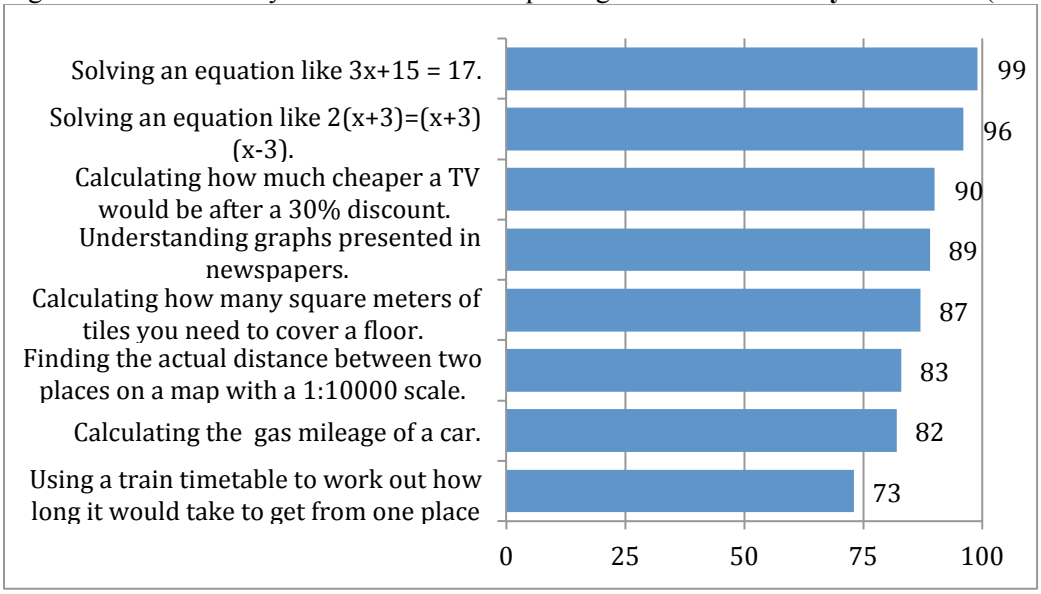
Note that these figures are SAMPLE data charts that illustrate how the information is presented for each individual high school in the school reports. The text highlights average findings from the relevant PISA data.

Students' Self-Efficacy in Math

Successful learners often believe in their own *self-efficacy*: they are confident in their ability to solve tasks related to mathematics. In fact, students' self-efficacy is one of the strongest predictors of their performance, explaining on average 23% of the variance in mathematics performance across OECD countries.

Figure 12 shows the eight questions regarding students' *self-efficacy in mathematics*. Students were asked how confident they feel about having to do each of the mathematics tasks. In PISA 2012, students in the United States were asked to respond to the same questions. The task that most United States students feel confident about is "Solving an equation like $3x + 15 = 17$." Nine out of ten students in the United States are confident or very confident that they can solve that task. At the other end, the task that students feel less confident about is "Finding the actual distance between two places on a map with a 1:10,000 scale." Six of ten students in the UNITED STATES feel that they can solve that task.

Figure 12. Self-efficacy in Math: Percent Reporting **Confident** or **Very Confident** (HCPSS ***SAMPLE***)



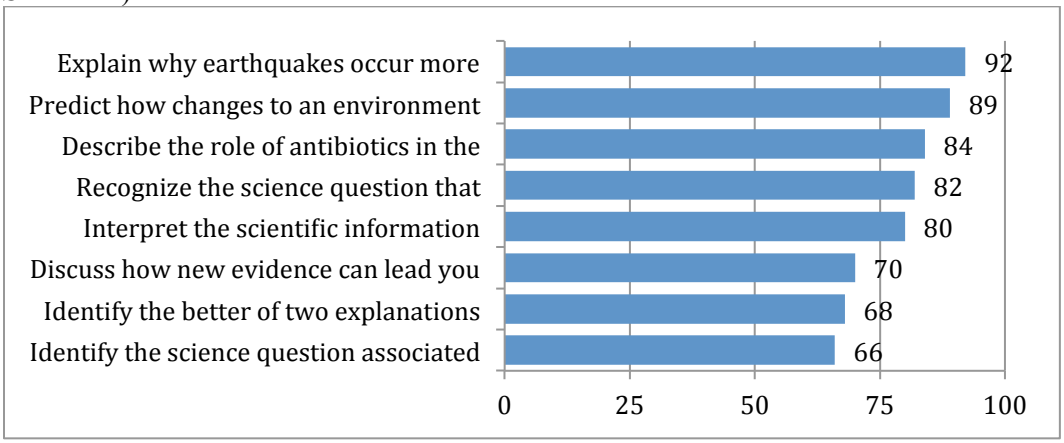
Note that these figures are SAMPLE data charts that illustrate how the information is presented for each individual high school in the school reports. The text highlights average findings from the relevant PISA data.

Students' Self-Efficacy in Science

Students who lack confidence in their ability to solve science tasks often tend to show weaker performance results than those with a high level of self-efficacy.

Figure 13 shows the eight questions regarding students' *self-efficacy in science*. Students were asked how confident they feel about having to do each of the science tasks. In PISA 2006, students in the United States were asked to respond to the same questions. The task that most students in the United States feel that they can do "easily" or "with a bit of effort" is "Recognize the science question that underlies a newspaper report on a health issue." Eight of ten students in the United States respond that they feel capable of the task. At the other end, the task that students feel less confident about is "Identify the better of two explanations for the formation of acid rain." Six out of ten students in the United States feel that they can solve that task "easily" or "with a bit of effort."

Figure 13. Self-efficacy in Science: **Identify task easily** or **Identify task with a bit of effort** (HCPSS ***SAMPLE***)



Note that these figures are SAMPLE data charts that illustrate how the information is presented for each individual high school in the school reports. The text highlights average findings from the relevant PISA data.

Conclusion and Next Steps

Students are increasingly expected to apply knowledge and skills with the capacity to problem solve and innovate in novel settings; in order to be successful, they must be able to interpret meaning from complex information and be prepared to thrive in a dynamic world. The guiding principles in HCPSS illustrate that we believe in:

- Achieving excellence in all we do.
- Developing each student's unique gifts.
- Engaging students in relevant, experiential, and personalized learning.
- Cultivating creative problem-solving, critical thinking, and innovation.
- Promoting integrity, civility, and global citizenship.
- Enriching learning by honoring our diversity.
- Fostering a culture of collaboration, trust, and shared responsibility.
- Removing barriers to success.

Next steps will include a continuous improvement process to support high expectations for all children, rigor in every class, and positive student and staff engagement. International education systems that have strong learning outcomes have been able to mobilize rapid improvements and HCPSS has demonstrated that schools in this school district are performing as well as world-leading school systems; in some cases, HCPSS schools are outperforming world-leading school systems. HCPSS is committed to applying new understandings and insight to further develop innovative approaches and strategies to teaching and learning. Relevance, rigor, and relationships are key factors identified by experts at America Achieves. Vision 2018 highlights rigor and acceleration, engagement, performance and well-being. The OECD Test for Schools provides one measure of performance in HCPSS and multiple measures are already in place to reflect academic learning and feedback on academic progress.

The National Research Council Report recommends transformational teaching practices:

- Employing multiple and varied representations of concepts and tasks (representations, simulations, inquiry)
- Employing questions, explanation, and elaboration by students
- Engaging students in challenging tasks and providing guidance in their own learning processes
- Fostering student motivation by linking learning to interests and real-world applications of knowledge and skills
- Monitoring assessment data to inform teaching and learning

The OECD Test for School provides an opportunity to stretch the HCPSS commitment to Vision 2018 in order to foster continuous learning and improvement. HCPSS is a state, national and international leader. The district supports a culture of collective responsibility and strong alignment of goals, outcomes, strategies, and resources. Students in HCPSS are demonstrating, across multiple measures, that they possess the knowledge, skills, and competencies, as well as positive attitudes about school and learning, to be successful in a global economy. Just as our students yearn for challenging tasks and real-world applications, HCPSS will continue to be a world-leading school system that responds to the challenge of teaching and learning with rigor to accelerate learning, relevance to authenticate learning, and relationships to engage learning for all students.