

About the *HSTW* Assessment

Introduction

The *HSTW* Assessment has been an integral tool in the school improvement efforts of *High Schools That Work (HSTW)*, *Technology Centers That Work (TCTW)* and participating states, districts and schools since its first administration in 1988. This assessment has provided comprehensive school-level data that disaggregate achievement by students' perceptions of school and classroom experiences. These results have given schools, districts and states a unique opportunity to determine what is and is not working to increase student achievement.

The *HSTW* Assessment consists of three subject tests (reading, mathematics and science) and a student and teacher survey. The content for each subject test is based on the 2009 NAEP frameworks which were modified to reflect the goals of *HSTW*. In addition to measuring continuous school improvement, the *HSTW* Assessment measures readiness for postsecondary education and the workplace.

Who participates in the *HSTW* Assessment?

The *HSTW* Assessment is administered to seniors at *HSTW* schools and *TCTW* centers in even-numbered years. It is administered towards the beginning of the last semester of high school so that it can reflect almost the entire high school career of the cohort while still allowing for the results to be available in time for schools and students to make use of them.

Some *HSTW* schools administer the assessment to all of their seniors. However, most schools administer the assessment to a random sample of seniors. Experts in survey sampling methods have determined that a sample of students, if the sampling is truly random, can yield group results that are representative of how the total group of seniors would have performed. All participating schools are provided with instructions for sampling their seniors to ensure that the sampling is truly random. There are four acceptable selection models currently in use at *HSTW* and *TCTW* schools:

1. Test all seniors completing four units (or their equivalent) in a career/technical area
2. Test a random sample of 60 or more seniors completing four units (or their equivalent) in a career/technical area
3. Test a random sample of 60 or more seniors (to be representative of all seniors)
4. Test all seniors

In order to safeguard the reporting of trend data ("history"), schools should employ the same sampling method during each testing year.

Special Arrangements

All students who are routinely included in state-mandated assessments and can function in a testing environment must be included in the pool of students from which a school's random sample of *HSTW* test-takers is drawn. In compliance with 1997 IDEA regulations, this means that students with Individual Education Plans (IEPs) must be included in the sampling. All schools must abide by federal, state and local regulations regarding testing students with disabilities. If a student's IEP calls for an amanuensis to assist with testing or extended testing

time, it is a school's responsibility to provide this service. ETS will provide audio and large print editions of the student survey in all three subject tests upon request.

Students who are English language learners (ELL) must also be included in sampling. English language learners may use a dual-language dictionary when answering the student survey and when taking the mathematics and science tests. Students who need this accommodation must provide their own dual-language dictionaries. Please be aware that dual-language dictionaries are NOT permitted for the reading test because that test is measuring reading proficiency in English.

Where and when is the assessment administered?

The *HSTW* Assessment is administered at the participating schools. The schools are responsible for communicating with participating students to ensure that they are briefed about where and when to report for testing and are properly oriented with regard to the nature and purpose of the assessment.

While schools must administer the assessment within the specified window and return materials by the posted deadline, schools are responsible for selecting the specific dates and time to administer the assessment. Additionally, schools will select the order in which they will administer the four components (reading test, mathematics test, science test, student survey). The teacher survey can be administered anytime during the window.

How long does it take?

The survey consists of three sections. Section 1 asks students about the courses they have taken in high school. Sections 2 and 3 ask students about their perceptions of their high school experiences. Because Section 1 requires students to record all the courses they have taken, counselors and teachers at many *HSTW* schools complete this part of the survey for the students. This labor performed before the administration reduces administration time as well as student angst and results in much more accurate transcript data. If a school does not complete Section 1 for the students, completing that section typically takes about 15 to 30 minutes. Completing Sections 2 and 3 takes about 45 minutes.

The three subject tests are timed. The reading test takes 75 minutes; the mathematics test takes 80 minutes; and the science test takes 55 minutes.

This means that the total administration time for the entire assessment is almost five hours. Please note that additional time may be used for greeting students, seating them, reading general instructions, handing out and collecting test materials and answer documents, giving students breaks between parts of the assessment and so on. In order to prevent fatigue and ensure that students do their best, schools should plan on at least two assessment administration sessions. Some schools schedule three or four sessions. Even though school schedules can be challenging and demanding, a school should NOT attempt to administer the entire *HSTW* assessment in a single session.

Confidentiality of Scores

The school reports issued to schools, districts, states and SREB show only group data. No individual student scores are given in these reports; no students are named in the reports. In addition, measures are taken to suppress data in the site reports when the number of students factoring into a particular calculation is small enough to make it possible to identify individuals.

Individual student score reports are sent by ETS to the students' schools for distribution to the students and will be released only to the *HSTW* testing coordinator for distribution to the individual students. SREB abides by all federal and state laws protecting the confidentiality of student data.

Student Survey

The survey consists of three sections. Section 1 asks students about the courses they have taken in high school. Sections 2 and 3 ask students about their perceptions of their high school experiences. *HSTW* recommends that school personnel complete section 1 for students. This reduces administration time as well as student angst and results in much more accurate transcript data.

Teacher Survey

The Teacher Survey is designed to provide teachers an opportunity to share their insights into school and classroom practices and to indicate the professional development they have received and would like to receive in coming years.

All teachers (grades 9-12) participate in the Teacher Survey – including academic and career/technical teachers. Non-teaching staff (such as media specialists, guidance counselors and administrators) do not complete surveys as very few questions relate to their specific experiences. It is important that all specified teachers complete the survey so that results represent the views of all teachers in the school rather than a select few.

While *HSTW* and *TCTW* schools utilize the same subject tests and student survey, they participate in different teacher surveys, tailored to their unique experiences.

Reading Test

The reading test consists of three separately timed sections. To accommodate the length of the reading passages, the test is 75 minutes long, containing one 20-minute section, one 25-minute section and one 30-minute section. It is composed of multiple-choice questions only.

Text Types

The reading test will assess students' understanding of two text types: informational and literary nonfiction.

- Informational texts: The diverse number and types of informational texts explain, in part, why a large percentage of this text type will be found in the assessment. Students read informational text for many purposes. For example, they read textbooks, newspaper articles and essays to obtain general or specific information. Editorials, speeches and advertisements are examples of informational texts that are meant to persuade or inform

students of a specific point of view. Trade manuals, product support materials and instructions for filling out forms are examples of informational text that explain procedures and provide directions for how to follow them. Each of the informational text types mentioned here can be presented in different formats or combinations of formats. For example, a newspaper article might be presented as continuous prose and also include charts, tables, maps or other graphical representations that require readers to synthesize meaning across the texts.

- **Literary Nonfiction texts:** These types of texts not only present information and ideas but may also employ distinctly literary elements and devices to communicate their message and to make their content more accessible to readers. Biographies and autobiographies, for example, usually follow a structure that in many ways mirrors the story structure of fictional works and they may employ literary devices, but they also present information. Literary essays and speeches may be structured differently but also draw on literary devices.

Cognitive Targets

Questions in the reading test also measure the kinds of thinking that underlie reading comprehension. These include:

- **Locate/Recall.** Responses to these questions provide information about the most basic comprehension skills, those that ultimately form the foundation for a more elaborated understanding of what is read.
- **Integrate/Interpret.** Responses to these questions move beyond the discrete information, ideas, details and themes presented in text and extend initial impressions by processing information logically and completely.
- **Critique/Evaluate.** Responses to these questions consider the text critically by assessing it from numerous perspectives and synthesizing what is read with other texts and other experiences.

Mathematics Test

The mathematics test consists of three separately timed sections. The test is 80 minutes long, containing two 40-minute sections. Calculator use is permitted for one of the sections. The test is composed of multiple-choice questions only.

The content areas assessed in the mathematics test are Number Properties and Operations; Measurement/Geometry; Data Analysis, Statistics and Probability; and Algebra.

Content Areas

- **Number Properties and Operations** focuses on student understanding of numbers (whole numbers, fractions, decimals, integers) and their applications. Understanding numerical relationships as expressed in ratios, proportions and percents is also included here.
- **Measurement/Geometry** focuses on student ability to describe real -world objects using numbers. Students are asked to identify attributes, select appropriate units, apply measurement concepts and communicate measurement -related ideas to others. Questions require an ability to read instruments using metric, customary or nonstandard units, with emphasis on precision and accuracy. This area also focuses on student's knowledge of

geometric figures and relationships and on their skills in working with this knowledge. It also focuses on the use of precise geometric terms and understanding how to prove statements deductively.

- Data Analysis, Statistics and Probability focuses on data representation and analysis across all disciplines and reflects the importance and prevalence of these activities in our society. Questions emphasize appropriate methods for gathering data, the visual exploration of data and the development and evaluation of arguments based on data analysis.
- Algebra focuses on topics that are based on content covered by two full years of high school algebra. In addition to questions about linear functions, questions about nonlinear functions such as quadratic, proportional (k/x), exponential and trigonometric may be presented in problem situations. Students should be able to analyze the defining properties of each function type. This area also focuses on translating verbal descriptions of problem situations into symbolic form. Expressions involving several variables, systems of linear equations and solving inequalities are also a part of this content area.

Mathematical Complexity

In addition to assessing students' understanding of mathematical content, the questions in the mathematics test also assess at what level (high, moderate, or low) students can solve mathematics problems.

- High Complexity questions make heavy demands on students, who are expected to use reasoning, planning, analysis and judgment. Students may be expected to justify mathematical statements or develop a mathematical argument. These items might require students to generalize from specific examples.
- Moderate Complexity questions are those in which students might be asked to interpret a representation or to bring multiple ideas together. In addition, they might be asked to show or explain their work, but would not be expected to justify it.
- Low Complexity questions expect students to recall or recognize concepts or procedures. These questions typically specify what the student is to do, which is often to carry out a procedure that can be performed mechanically.

Use of Calculators

Students should bring a calculator (either graphing or scientific), since calculators are permitted for one of the sections of the mathematics test. While the use of a graphing calculator instead of a scientific calculator will not present an advantage on this test, the use of a four-function calculator may place the student at a slight disadvantage. Students will not be permitted to use calculators on the remaining section of the test.

Science Test

The science test consists of two separately timed sections. The test is 55 minutes long, containing one 28-minute section and one 27-minute section. It is composed of multiple-choice questions only.

The content areas assessed in the science test are Life Sciences, Physical Sciences and Earth and Space Sciences.

Content Areas

- **Life Sciences:** Major categories of topics in life sciences in this assessment include structures and functions of living organisms (organization and development, matter and energy transformations, interdependence) and changes in living systems (heredity and reproduction and evolution and diversity).
- **Physical Sciences:** This area focuses on properties of matter and changes in matter; forms of energy and energy transfer and conservation and motion at the macroscopic level and forces affecting motion.
- **Earth and Space Sciences:** Questions in this area include topics that pertain to the earth's history, materials, atmosphere and weather, oceans, the solar system, galaxies and the universe. Questions on matters related to the environment are included.

Science Practices

In addition to assessing students' understanding of the three content areas listed above, the science test will also assess how well students can engage in the following four science practices.

- **Identify Science Principles:** Students will be assessed on their ability to describe, measure, or classify observations; state or recognize principles included in the content statements; connect closely related content statements; and relate different representations of science knowledge.
- **Using Science Principles:** These include explaining observations of phenomena; predicting observations of phenomena; suggesting examples of observations that illustrate a science principle; and proposing, analyzing and/or evaluating alternative explanations or predictions.
- **Using Scientific Inquiry:** These include designing or critiquing aspects of scientific investigations; conducting scientific investigations using appropriate tools and techniques; identifying patterns in data and/or relate patterns in data to theoretical models and using empirical evidence to validate or criticize conclusions about explanations and predictions.
- **Using Technological Design:** These include proposing or critiquing solutions to problems, given criteria and scientific constraints; identifying scientific trade-offs in design decisions and choosing among alternative solutions; and applying science principles or data to anticipate effects of technological design decisions.

HSTW Award of Educational Achievement

Students earn the *HSTW* Award of Educational Achievement by completing a college-preparatory course of study in at least two of three subject areas (English, mathematics and science); completing a concentration in a career/technical area, mathematics/science or the humanities; and meeting all three readiness goals on the *HSTW* Assessment. Qualifying students will receive an award certificate.

Student Reports

Students participating in the *HSTW* Assessment will receive an individual student report detailing their performance on the assessment. This report will include the student's performance level for each subject, how far he/she has gone in completing the *HSTW*-Recommended Curriculum and whether he/she earned the *HSTW* Award of Educational Achievement.

The student report will contain detailed information on the *HSTW* Assessment such that the student can take this report to placement officers at a community college or to an employer, and they will be able to interpret that student's performance with regard to college- and workplace-readiness.

School Reports

The *HSTW* Assessment Report includes three major sections: an executive summary that provides schools with a snapshot of their implementation of the reform design and of their performance on the assessment; an overview section that provides more detailed information on the school's performance on the subject tests and progress in implementing the *HSTW* design; and detailed tables breaking out student achievement by survey results and presenting teacher survey results.

The executive summary contains information on the school's performance on the *HSTW* indices; the percentage of students meeting the *HSTW* readiness goals with a comparison to the network and high-scoring sites; the percentage of students in each performance level for each subject test; and a placeholder for the school to fill in their AYP status, graduation rate and state assessment results.

The overview section contains more detailed information on the school's performance on the *HSTW* indices and subject tests. More detailed tables on mean scores, the percentage of students meeting readiness goals and the percentage of students within each proficiency level will be provided. Additionally, the percentage of students experiencing a low, moderate and intensive emphasis on each of the *HSTW* indices will be provided along with the percentage of students meeting readiness goals within each level of emphasis.

The final section of the report will include tables breaking out student achievement by survey results. This section will also contain teacher survey results.

While the report is lengthy, it is designed in such a way that an overview of the entire report and the key points can be found within the first few pages, which will present information graphically. These pages can also serve as a stand-alone summary of the entire report. The reason the report remains lengthy is because *HSTW* wants to provide detailed data tables to those schools that find these data tables useful.