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ABSTRACT

In 1994, the Student Assessment was administered to over 12,000 vocational completers at 197 new High Schools that Work (HSTW) sites. Findings indicated that career-bound students at these sites trailed academic students nationwide in reading. Teachers in all vocational programs needed to pay more attention to reading. Career-bound females scored higher than males. White students scored significantly higher in reading than minorities. Reading achievement was associated with high-level courses and frequent reading and writing in academic and vocational classes. Many new sites were beginning to integrate reading and writing into courses across the curriculum. Reading achievement was associated with effort, but many students did not see the need for working hard in high school. Student achievement reflected teachers' beliefs and expectations. Recommended administrative strategies for improving reading achievement included providing teachers with staff development in using reading and writing across the curriculum, providing teachers with shared planning time, and requesting redesigned English courses for career-bound students. These classroom strategies were recommended: teach high-level content to all students; require students to read and use technical materials in vocational classes; have students react to and use what they read; integrate reading with writing; and provide a variety of reading formats. (Examples of actions schools can take are provided throughout the report.) (YLB)

Reading: A Report on Improving Career-Bound Students' Learning

High Schools That Work

Gene Bottoms

HIGH SCHOOLS THAT WORK

A report on improving career-bound students' learning

reading

Reading Is an Instructional Process That Helps Students Learn Academic and Technical Content

by Gene Bottoms

A healthy democracy and a strong economy require lifelong learners who can think analytically, solve problems, balance opposing points of view, reason quantitatively, make thoughtful judgments, and respond to changing conditions and unexpected events.

Lifelong learners approach reading actively. They connect seemingly unrelated facts, link new information to what they already know, and make decisions based on what they read.

Reading helps young people develop and strengthen needed skills, yet many American high schools reserve thought-provoking projects and assignments for students who already read and write well. Students who read poorly are usually placed in general and basic-level academic courses where they practice low-level skills taught in isolation from meaning and use.

The Southern Regional Education Board (SREB)-State Vocational Education Consortium contends that the way to raise the reading performance of career-bound[1] high school youth is for all academic and vocational teachers to:

- Use reading as an instructional process that helps students learn academic and technical content;
- Ask all students to complete challenging projects and tasks that require them to organize and synthesize information from several sources, interpret information, relate what they have read to new experiences, make critical responses to written materials, and write their own materials;
- Use instructional strategies that help students see connections between what they study in school and their roles as present and future citizens, consumers, and workers.

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[1] The Southern Regional Education Board defines career-bound youth as high school students who plan to work, attend a two-year community college or vocational school, participate in an apprenticeship program, or enter the military after high school graduation. Career-bound students are not planning to enter a four-year college or university but may make that decision at some future time.

Closing the Gap

The Southern Regional Education Board's *High Schools That Work* program involves over 400 high schools in 19 states in raising the achievement of career-bound students in reading, mathematics, science, and technical studies. SREB's goal is to close by one-third the achievement gap between vocational completers[2] at *HSTW* sites and academic students[3] nationwide. The program's goals and key practices (see page 30) guide schools as they change what and how they teach and what they expect of career-bound students.

Progress toward the goal is measured by the *High Schools That Work* Student Assessment, a series of tests taken by vocational completers in their senior year at schools participating in the *HSTW* program. The tests (in reading, mathematics, and science) draw questions from a pool of items in the 1992 National Assessment of Educational Progress (NAEP).[4]

In 1994, SREB administered the Student Assessment to over 12,000 vocational completers at 197 new *HSTW* sites. These schools joined the *HSTW* program in 1993 and participated in the assessment for the first time in 1994.

This report addresses the strengths and weaknesses of new *HSTW* sites in preparing students to become effective readers. It also includes actions schools can take to improve the reading skills of career-bound youth.

The Reading Achievement of Career-Bound Students

SREB drew from multiple sources in compiling baseline data on career-bound students at new *HSTW* sites:

- The *High Schools That Work* Student Assessment measures the academic achievement of seniors preparing to complete high school with a concentration in career studies. Some 12,000 students at 197 schools in 13 states participated in the 1994 assessment.
- Students who participated in the 1994 assessment completed a 140-item Student Questionnaire on their perceptions of the school's academic climate and their plans for the future.
- SREB worked with the National Center for Research in Vocational Education (NCRVE) to analyze transcripts of students participating in the Student Assessment.

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2 SREB defines a vocational completer as a high school student who completes at least four credits in an approved vocational area and takes three mathematics and three science courses. At least two of the courses in each category should be equal to the college preparatory level.

3 The term "academic students" used throughout this publication refers to students who complete a college preparatory high school curriculum.

4 The Educational Testing Service (ETS) prepared the *High Schools That Work* Student Assessment for SREB.

- SREB surveyed over 6,300 academic and vocational teachers and school administrators at new *HSTW* sites in 1994 and issued reports on 16 indicators of what schools are doing, what teachers expect of career-bound students, and what teachers see as their most important staff development needs.

Career-Bound Students at New *HSTW* Sites Trail Academic Students Nationwide in Reading

The SREB reading goal is 279.0. In analyzing the 1994 data, SREB found that vocational completers at new *HSTW* sites scored about the same (265.0) as students in the national vocational sample (266.6) but significantly lower than academic students nationwide (302.4). High-scoring new *HSTW* sites[5] came close (276.2) to the goal (see Table 1).

Eighteen of the 197 new *HSTW* sites tested in 1994 met the SREB reading goal. This total trailed the number of new sites meeting the goal in mathematics (23 sites) and in science (37 sites).

Table 1
Comparison of Reading Scores of Vocational Completers at New *HSTW* Sites with Scores of Vocational Students and Academic Students Nationwide

		National Sample			
Vocational Completers at New *HSTW* Sites	Vocational Completers at High-Scoring New *HSTW* Sites	National Sample of Vocational Completers	National Sample of Academic Students	National Average of All Students	SREB Reading Goal
265.0 (0.3)	276.2 (0.6)	266.6 (1.3)	302.4 (0.4)	286.6 (0.3)	**279.0**

Note: Scores for students in the national samples are based on the 1990 National Assessment of Educational Progress (NAEP). The differences between the average scores of vocational completers at new *HSTW* sites and the average scores of vocational students in the national samples are not statistically significant. The numbers in parentheses are standard errors.

The *HSTW* Reading Assessment Measures How Students Interact with Written Materials

After individuals leave school, they seldom read for the purpose of passing a test. Rather, they read for information, for completing a task, and for pleasure. The *HSTW* Student Assessment reflects the purposeful aspect of reading by gauging students' ability to use written words to gain information and perform a task.

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5 High-scoring new sites are *High Schools That Work* sites that had scores in two of three areas (reading, mathematics, and science) that ranked in the top one-third of the 197 sites participating in the 1994 *High Schools That Work* Student Assessment.

Good readers interact with written materials in a number of ways. Therefore, the Student Assessment measures four types of reader interaction. These are listed below, along with examples of test items[6] measuring students' competence in each kind of interaction:

- **Gaining an initial understanding.** Items of this type assess the ability to grasp basic facts in a written passage. Typical items include, "What does this article tell you about _____?" or "What time can you get a non-stop flight to_____?"
- **Developing an interpretation.** This type of interaction asks students to connect facts, infer relationships, and relate causes and effects. Items might include, "What caused this event?" or "What must you do before this step?"

  Making a Personal Response. Effective readers relate what they read to their experiences. This type of interaction requires students to connect the text and their experiences. Items might include, "To accomplish [a given task], what information would you need to find that you do not have?" or "Describe a situation in which you could leave out this step."
- **Taking a critical stance.** Sophisticated readers acknowledge that written materials are created rather than dropped from the sky. People write them, and they write them from a particular point of view, which is influenced by culture, gender, and experience. These items take into account the limited quality of texts. Items might include, "What could be added to improve the author's argument?" or "How useful would this article be for (a particular purpose)?"

Each of these ways to interact with texts requires active participation on the part of the student—they are not simply extracting information from the text, they are piecing together new meanings.

The *HSTW* Student Assessment approaches reading as an active instructional process. In doing so, it reflects the *HSTW* goal of integrating challenging academic and career studies. The *HSTW* key practices can serve as a framework for teachers and administrators in developing curriculum and instructional strategies that challenge students to become active lifelong readers (see page 5).

Making a Personal Response: The Reading Area in Which Students at New *HSTW* Sites Scored the Lowest

On the reading portion of the *HSTW* Student Assessment, students scored highest in the area of "forming an initial understanding" (see Table 2). Students at all new *HSTW* sites, including high-scoring new sites, were weakest in the area of "making a personal response."

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6 Examples for each of the four types of interaction are drawn from *Reading Framework for the 1992 and 1994 National Assessment of Educational Progress*. NAEP Reading Consensus Project. Developed...by the Council of Chief State School Officers for The National Assessment Governing Board.

The *High Schools That Work* Key Practices Provide a Framework for Achieving the SREB Reading Goal

The *High Schools That Work* key practices provide a framework for improving students' reading skills. SREB recommends these strategies:

- Establish higher expectations by asking students to interpret and make personal responses to written materials as part of academic and vocational instruction.
- Increase access to challenging vocational studies by using instructional approaches that support students in using reading, writing, and communication skills to locate and organize information and to perform tasks.
- Increase access to English and other academic courses that use applied and contextual strategies to engage students in interpreting written information and in getting students to connect information to their experiences.
- Require students to take at least four English courses with college preparatory-level content and standards. Students in these classes should write research papers and make oral presentations that meet high standards. They should also respond critically and personally to what they read.
- Provide access to a structured system of work-based learning that includes opportunities for students to demonstrate the reading, writing, and communication skills needed for further learning in a career field.
- Create an organizational structure and schedule enabling English, other academic, and vocational teachers to develop integrated learning projects that advance students' reading, writing, and speaking skills.
- Involve students and their parents in a guidance system designed to help students complete an accelerated and coherent program of study. Students' courses should require them to read challenging materials, write papers, and make presentations.
- Engage students in using reading and writing to complete meaningful tasks.
- Engage students in making comparisons, defending a point of view, and critically analyzing ideas by having them complete challenging essay examinations in all classes.
- Provide a structured extra-help system to assist career-bound students in improving their reading and writing skills.

The area in which students at new *HSTW* sites scored the highest—"forming an initial understanding"—requires them to "get the facts" but does not demand more complex engagement with the text. "Making a personal response," the area in which these students scored the lowest, requires them to relate reading to their own experience. **In this section of the test, students are asked to integrate information, not merely "parrot" it. They hypothesize, evaluate, and speculate based on experience they bring to the test.** Perhaps one reason students scored low on these skills is that they are not often asked to use them. Surveys of students and teachers indicate that career-bound students are not being asked to combine written materials and prior knowledge in thoughtful, complex ways. (Results of these surveys are mentioned throughout this report.)

Table 2

Comparison of Correct Responses in Various Reading Areas by Students at All New *HSTW* Sites, at High-Scoring New *HSTW* Sites, and in the National Sample of Academic Students

	Percent Correct		
	All New *HSTW* Sites	High-Scoring New *HSTW* Sites	National Sample of Academic Students
Purpose of reading			
Gaining information	56	61	72
Performing a task	60	65	74
Relationship to text			
Forming an initial understanding	85	91	
Developing an interpretation	62	68	
Making a personal response	34	40	
Taking a critical stance	56	60	

Note: The Educational Testing Service did not report data from the national academic sample in the four categories of forming an initial understanding, developing an interpretation, making a personal response, and taking a critical stance.

Percentages are rounded to the nearest whole number.

HSTW sites that want to improve reading achievement need to require in-depth reading in all courses. These reading assignments should require students to connect facts, infer relationships, and relate causes and effects. All teachers should ask students to evaluate and make hypotheses based on what is read.

Teachers in All Vocational Programs Need to Pay More Attention to Reading

Students at new *HSTW* sites who achieved the highest scores in reading were enrolled in business/office and health programs; only business/office and health students at high-scoring new sites exceeded the SREB reading goal (see Table 3). Those who scored the lowest were enrolled in agriculture, trade and industrial, and home economics concentrations. This distribution in student performance occurred at all new *HSTW* sites, including high-scoring new sites. Vocational teachers at high-scoring new *HSTW* sites seem to demand more of their students than do vocational teachers at other high schools because students in every vocational program at high-scoring new sites scored significantly higher than students in those programs at all new sites (see Table 3).

Table 3
Comparison of Students' Average Reading Scores by Vocational Program at All New *HSTW* Sites and at High-Scoring New *HSTW* Sites

Vocational Program	All New *HSTW* Sites	High-Scoring New *HSTW* Sites
Agriculture	257.2 (1.2)	267.0 (2.0)
Business/Office	274.0 (0.6)	284.0 (0.9)
Health	267.8 (1.1)	280.3 (1.7)
Home Economics	259.8 (1.0)	271.6 (2.1)
Marketing	264.6 (1.3)	272.4 (2.1)
Technical	262.1 (0.8)	272.7 (1.6)
Trade/Industrial	258.7 (0.9)	269.6 (1.5)
SREB Reading Goal	**279.0**	

Note: The numbers in parentheses are standard errors.

Career-Bound Females Scored Higher Than Career-Bound Males at New Sites

Career-bound females scored significantly higher than career-bound males at new *HSTW* sites (see Table 4). This difference existed both at high-scoring new sites and in the national sample of vocational students. Females at the high-scoring sites exceeded the SREB reading goal. One possible reason for their higher reading scores is that females continue to outnumber males in enrolling in high school business and office courses that build information-processing skills. Schools that want to advance the learning and career options of male students need to require them to read for information and to do research, organize, synthesize, interpret, and present information in written and oral reports.

HSTW Sites Need to Close the Reading Gap between Minority and White Students while Continuing to Raise the Reading Ability of All Students

At all new *HSTW* sites, including high-scoring sites, white students scored significantly higher in reading than did African Americans and other racial/ethnic minorities (see Table 5). At high-scoring new *HSTW* sites, white students scored significantly higher than the national sample of vocational students. Only white students at high-scoring new *HSTW* sites met the SREB reading goal. African American and Latino/Hispanic students at new *HSTW* sites did not score statistically significantly higher than their counterparts in the national sample of vocational students.

Table 4

Comparison of Vocational Students' Average Reading Scores by Gender at All New *HSTW* Sites, at High-Scoring New *HSTW* Sites, and in the National Sample

	Average Reading Scores		
	All New *HSTW* Sites	High-Scoring New *HSTW* Sites	National Sample of Vocational Students
Female	269.9 (0.4)	281.5 (0.7)	272.4 (1.9)
Male	259.8 (0.5)	270.3 (0.9)	261.8 (1.8)
SREB Reading Goal	**279.0**		

Note: The numbers in parentheses are standard errors.

Table 5

Comparison of Vocational Completers' Average Reading Scores by Race/Ethnicity at All New *HSTW* Sites, at High-Scoring New *HSTW* Sites, and in the National Sample of Vocational Students

Race/ Ethnicity	All New *HSTW* Sites	Percent of Representation at New *HSTW* Sites	High-Scoring New *HSTW* Sites	Percent of Representation at High-Scoring New *HSTW* Sites	National Vocational Sample	Percent of Representation in the National Vocational Sample
African American	254.6 (0.7)	26	266.0 (1.3)	19	252.4 (2.8)	21
Latino/Hispanic	253.0 (1.6)	4	262.5 (3.8)	2	257.7 (4.4)	8
White	269.7 (0.4)	69	279.1 (0.6)	78	273.5 (1.5)	66
SREB Reading Goal	**279.0**					

Note: School leaders at participating *HSTW* sites selected students who had completed four Carnegie Units in a vocational concentration. Students in the national sample identified themselves as vocational students.

The proportion of students participating in the assessment at new *HSTW* sites was larger than the national sample of vocational students in the case of African Americans and smaller in the case of Latino/Hispanic students.

The numbers in parentheses are standard errors. Percentages are rounded to the nearest whole number. They do not total 100 because a few students belong to other racial/ethnic categories.

Winder-Barrow High School in Winder, Georgia Involves All Faculty in Reading to Learn

Reading instruction at Winder-Barrow High School in Winder, Georgia, occurs throughout the school. Students read to learn in agriculture, business, mathematics, and science classes as well as in traditionally text-oriented courses such as English and social studies.

Convinced that students need to put their reading skills to work as they learn content, Principal Randy Howell made a commitment to school-wide staff development to strengthen reading strategies. In the summer of 1993, he and two members of his staff (reading teacher Susan Wages and business teacher Jerrie Hulsey) attended a Reading to Learn workshop conducted for *High Schools That Work* sites by Ray Morgan[7] of Old Dominion University, Norfolk, Virginia. The workshop provided a variety of strategies for the teaching of reading. Participants learned to facilitate the training of other teachers and developed an action plan for sharing reading techniques school wide.

After the workshop, Wages and Hulsey invited 25 teachers from their school to participate in weekly after-school training sessions for staff development credit. Each session featured an activities period during which teachers developed materials for their classes.

Their materials follow the three-part structure of Morgan's Reading to Learn program: pre-reading, assisted reading, and reflection. Students are not simply told what to read; they are given structured tasks that guide them in making sense of texts. "If you want students to read, you must help them learn how," Wages said.

During the second semester, Wages visited one classroom per day to support teachers with feedback and suggestions concerning use of the Reading to Learn strategies with their students. Additional teachers were trained at a summer workshop and in a session presented in the fall of 1994. Seventy-five of the school's 100 teachers have taken the course, and the remainder will do so by the end of the summer of 1995.

Wages contrasted active reading with the all-too-common practice of preparing students for a test by listing facts on a chalkboard. "Telling students everything instead of letting them learn it for themselves is an injustice," she said.

All students need access to challenging assignments in all academic and vocational courses. These assignments should require students to read a variety of materials and to organize, interpret, and present information as written and oral reports.

School and Classroom Practices Affect Reading Achievement

The *High Schools That Work* key practices are based on the belief that most career-bound students can gain the types of knowledge, skills, and habits cultivated in a traditional college preparatory curriculum. To raise achievement, high schools need to implement school and instructional practices associated with greater student learning.

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[7] Ray Morgan is author of the book *Reading to Learn in the Content Areas*. His Reading to Learn course is available through *High Schools That Work*.

Electronics Students at Polytech High School in Delaware Are Writing a How-To Manual

Electronics students at Polytech High School in Woodside, Delaware, are literally "writing the book" as they learn how to test fuses, switches, cables, and other components of a circuit. In a three-year project that began in the 1994-95 school year, each student is producing a manual on using a multimeter to test components.

"Videotapes and textbooks describe electronics components but do not fully explain how to test them," said Charles Shinsky, electronics technology instructor at Polytech High School. Working in groups, his students are consulting electronics manuals, science textbooks, the dictionary, and other sources to find information for the easy-to-follow directions they are writing.

One major benefit of the project is that students are learning to use a variety of information sources. "In the past, if students couldn't find an answer in the textbook, they thought it didn't exist or they didn't need to know it," Shinsky said.

Students will work on the project in the 10th, 11th, and 12th grades. They will concentrate on components in the first two years and on circuits in the third year.

The component testing manual includes a cover page, a table of contents, procedures pages, and sources pages. The instructor regularly gives feedback on content, appearance, grammar, spelling, and punctuation.

The purpose of the project is to equip students to test any of the components from memory, just as they will have to do on the job. To prove that they can make the leap from theory to practice, students demonstrate their testing skills during regular interviews with the instructor.

"When we began this project in January, students were having difficulty testing components," Shinsky said. "By the end of the school year, they were very confident in their testing skills."

Reading Achievement Is Associated with High-Level Courses

Course enrollment data from the 1993 transcript analysis of *HSTW* sites underscore the benefits of a challenging curriculum (see Table 6). Among vocational completers who participated in the 1993 *HSTW* Student Assessment, those who completed the SREB-recommended curriculum in English courses scored significantly higher in reading than those who did not. The 1993 *HSTW* Transcript Analysis suggests that English departments at new *HSTW* sites are less progressive than mathematics departments at those schools in enrolling career-bound students into higher-level courses. Thirty-nine percent of career-bound students at new *HSTW* sites in 1993 met the SREB-recommended curriculum in mathematics, while only five percent met the SREB-recommended English curriculum. Advanced-level courses include College Preparatory English, Honors English, Applied Communication, Technical English, journalism, and composition. Lower-level courses include those designated as regular or basic.

Table 6

Comparison of Average Reading Achievement Scores by Level of English Courses Completed by Career-Bound Students at *HSTW* Sites in 1993

Level of English Courses Completed	Average Reading Score	Percent of Students	Mean number of units in higher-level English courses
SREB's recommended curriculum in English	57.9	5	4.3
Lower-Level English courses	50.6	95	1.3
1993 SREB Reading Goal	**55.1**		

Note: The 1993 reading scores, based on items from the 1986 National Assessment of Educational Progress (NAEP), were reported on a scale of 1 to 100, the scale used in 1986. The 1994 reading assessment, based on items from the 1990 NAEP, was very similar to the 1993 assessment but was reported on a scale of 1 to 500 to provide comparisons with the 1990 national samples. The difference in scores is statistically significant at the .01 level. Percentages are rounded to the nearest whole number.

Source: Composite Report for New *High Schools That Work* Sites—Profile of the 1993 Vocational Graduates (SREB).

SREB data suggest that low-level English courses at many high schools are failing to provide the written and spoken language skills that students will need on the job and in further education (see Table 6). **These schools clearly need to overhaul what they are teaching, how they are teaching, and what they expect of students in English courses.**

The link between higher-level course work and reading achievement is apparent in the responses of over 12,000 students to the 1994 *HSTW* Student Questionnaire administered in conjunction with the Student Assessment (see Table 7). Students at high-scoring new sites scored higher than those at all new sites in applied, general, and basic courses as well as in advanced courses. High-scoring schools hold students to higher standards, regardless of the type of English courses taken.

Schools Do Not Challenge Career-Bound Students

Even though the association between challenging course work and high achievement is clear from the SREB data, career-bound students are not routinely encouraged to enroll in higher-level courses. The 1994 *HSTW* Teacher Survey of over 6,300 academic and vocational teachers revealed that:

- 35 percent of academic teachers and 29 percent of vocational teachers said their schools expect career-bound students to enroll in lower-level courses;

Table 7

Comparison of Career-Bound Students' Average Reading Scores by Self-Reported English Course Experience at All New *HSTW* Sites and at High-Scoring New *HSTW* Sites in 1994

	All New *HSTW* Sites		High-Scoring New *HSTW* Sites	
	Percent of Assessed Students Taking the Course	Average Reading Score	Percent of Assessed Students Taking the Course	Average Reading Score
Advanced Placement or Honors English	7	280.3 (1.4)	9	292.3 (1.9)
College Preparatory English	25	271.0 (0.7)	26	283.7 (1.1)
Applied Communication	17	262.0 (0.8)	16	272.9 (1.3)
General or Basic English	48	261.2 (0.5)	46	270.4 (0.8)

Note: Differences between scores for students at high-scoring new *HSTW* sites regardless of type of English courses taken and scores for students at all new *HSTW* sites are statistically significant at the .01 level. Percentages are rounded to the nearest whole number. The numbers in parentheses are standard errors.

- Only 34 percent of all teachers believe it is "very important" to help career-bound students learn the essential content of college preparatory language arts, mathematics, and science courses;
- Only 20 percent of teachers believe their "most important objective" is to help career-bound students learn complex content.

Career-bound students know if their teachers have low expectations for them. Forty-two percent of students responding to the 1994 *HSTW* Student Questionnaire disagreed with the statement, "Most courses were challenging and exciting."

Schools that want to raise achievement in reading can begin by enrolling more career-bound students in more demanding English classes and by asking teachers to expect more of students in all English courses.

Reading Achievement Is Associated with Frequent Reading and Writing in Academic and Vocational Classes

Career-bound students who report that English teachers ask them to read at least two books a year and to write at least two major research papers a year are significantly better readers than those who report that they are asked to do less (see Table 8). However, fewer than half of career-bound students surveyed at new *HSTW* sites in 1994 reported that they were required to read more than two assigned books a year outside of class and to write more than two major research papers a year. Yet the capacities to research, interpret, organize, and present information are fundamental skills for an information-driven economy. English departments in most new *HSTW* sites have not set world-class standards that all students must meet. While most European countries teach their career-bound youth English as a second language, many American schools fail to develop students' capacity to use their native language effectively.

Table 8
Comparison of Average Reading Scores and Frequency of Students' Self-Reported Reading and Writing Assignments in English Classes at New *HSTW* Sites

	Read an Assigned Book Outside of Class		Wrote a Major Research Paper	
Frequency of completing	Percent of Students	Average Reading Score	Percent of Students	Average Reading Score
Never	12	260.2 (1.3)	10	256.4 (0.4)
Once a year	30	263.5 (0.8)	21	261.1 (0.9)
Twice a year	23	267.2 (0.9)	22	266.2 (0.9)
More than twice a year	35	267.8 (0.7)	48	269.0 (0.6)
SREB Reading Goal	**279.0**			

Note: The differences in reading scores for students who said their English teacher asked them to read at least two books a year outside of class and those who wrote at least two research papers versus those who did these types of assignments once a year or never are statistically significant at the .05 level. Percentages are rounded to the nearest whole number. The numbers in parentheses are standard errors.

Fewer than half of career-bound students surveyed at new *HSTW* sites in 1994 reported that they were required to read technical manuals daily or weekly. Students who are unable to read technical materials from a vocational field are ill-equipped to expand their knowledge and skills. **Employers say that the ability to read, interpret, and communicate orally and in writing are essential skills for employment.** However, over half the students responding to the 1994 *HSTW* Student Questionnaire reported that reading was seldom or never stressed in their vocational classes or that they did not remember it being stressed (see Table 9). However, students who reported that their vocational teachers often stressed reading and writing scored significantly higher in reading than students who said their vocational teachers did not do so.

Table 9

Students' Average Reading Scores and the Importance Given by Vocational Teachers to Reading and Writing at All New *HSTW* Sites

Students said:	Percent of Students	Average Reading Score
Reading was never stressed in vocational classes or student did not recall	25	258.4 (1.0)
Reading was seldom stressed	29	264.8 (0.6)
Reading was often stressed	46	268.9 (0.5)
Writing was never stressed or student did not recall	25	257.4 (1.0)
Writing was seldom stressed	31	265.7 (0.6)
Writing was often stressed	45	269.0 (0.5)
SREB Reading Goal	**279.0**	

Note: Differences in reading scores for students who said their vocational teachers often stressed reading and writing vesus never or seldom are statistically significant at the .05 level. Percentages are rounded to the nearest whole number. The numbers in parentheses are standard errors.

Many Teachers Do Not Use Reading and Writing as Instructional Strategies to Advance Student Learning of Subject Matter Content

Many academic and vocational teachers fail to use reading and writing as ways to help students gain subject matter information, to interpret it, and to integrate new information with prior understanding. The following data from the 1994 *High Schools That Work* Teacher Survey reveals a shocking picture of the limited effort made by teachers to use reading and writing as means to advance subject matter learning.

- 67 percent of teachers spend one hour or less per week reinforcing students' ability to write well;
- 57 percent of teachers spend one hour or less per week reinforcing students' ability to write as a means of understanding subject matter;
- 56 percent of teachers make two or less writing assignments per month;
- 25 percent of teachers make no writing assignments;
- 36 percent of vocational teachers seldom or never emphasize learning to write well;
- 29 percent of teachers include no essay questions on examinations.

Given these facts, it should not surprise high school principals to learn that employers hold today's high school graduates in low regard. In *An Assessment of American Education,*[8] employers said only 12 percent of today's high school graduates can write well and that only 33 percent can read and understand written and verbal instructions. This situation is unlikely to change unless high schools use reading and writing as a way to advance learning in all subjects.

Many New *HSTW* Sites Are Beginning to Integrate Reading and Writing into Courses Across the Curriculum

School-based instruction tends to be compartmentalized by subject area. The English department teaches reading, the mathematics department teaches mathematics, and so on. Yet, the real world does not operate this way. A workplace technician may need to use reading, mathematics, science, and technical knowledge in solving work-related problems. **The best way for teachers to help students prepare for a lifetime of purposeful reading is to help them find connections between subjects in school and experiences outside of school.** This type of instruction motivates students and imparts a sense of relevance to high school learning.

The first step in helping students connect school subjects is for teachers to learn what their colleagues are teaching. Only eight percent of teachers in the 1994 *HSTW* Teacher Survey strongly agreed that they were familiar with the content and specific goals of courses taught by other teachers at their school. Sixty-six percent of students responding to the *HSTW* Student Questionnaire in 1994 reported that they never had a joint writing assignment for which a grade was given in two classes.

The separation between academic and vocational teachers is particularly pronounced. Seventy-one percent of academic teachers reported in 1994 that they never met with vocational teachers to plan and develop integrated efforts. Sixty-three percent of teachers said they never participated in a planning group of academic and vocational teachers. Integrated instruction takes time, but it pays off in helping students see that academic knowledge and skills are essential in completing complex projects in their vocational studies. Integration

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[8] *An Assessment of American Education.* (New York: Committee for Economic Development, 1992).

also requires experimentation to determine the most successful approaches. However, only 36 percent of all teachers strongly agreed that they are encouraged to experiment in finding better ways to motivate students and improve their learning. This lack of encouragement in many schools leaves teachers and students with a fragmented curriculum that fails to prepare students to read for learning in all courses.

Fewer than half of vocational teachers (42 percent) indicated that their school and system administrators expect them to require students to read and comprehend technical materials. Only 38 percent of vocational teachers said they required their students to read and interpret technical books and manuals in completing assignments. Vocational teachers who do not help students use reading and writing skills in completing challenging projects are failing to prepare these youth to process information in an increasingly demanding workplace.

Reading Achievement Is Associated with Effort

Career-bound students who reported doing up to an hour of homework daily scored significantly higher in reading than those who said they did not have or did not do homework daily (see Table 10). More students at high-scoring new *HSTW* sites than at all new *HSTW* sites in 1994 reported doing homework.

Table 10
Comparison of Students' Average Reading Scores with the Amount of Student-Reported Homework at All New *HSTW* Sites and at High-Scoring New *HSTW* Sites

	All New *HSTW* Sites		High-Scoring New *HSTW* Sites	
Amount of time spent on homework	Percent of Students	Average Reading Score	Percent of Students	Average Reading Score
Did not have or did not do homework	36	261.9 (1.4)	32	271.8 (2.4)
Completed up to one hour of homework daily	48	267.2 (0.8)	54	278.2 (1.1)
SREB Reading Goal	**279.0**			

Note: Differences in scores are statistically significant at the .05 level. Percentages are rounded to the nearest whole number. Percentages do not total 100 because other categories of time spent on homework were not included. The numbers in parentheses are standard errors.

Despite a connection between homework and achievement, 55 percent of vocational teachers responding to the 1994 *HSTW* Teacher Survey said they require less than one hour of homework per week. Twenty-three percent of vocational teachers said they never make homework assignments.

Many Students Do Not See the Need for Working Hard in High School

The ability to read purposefully and efficiently is a valuable skill that students can carry with them into the workplace. However, too little high school instruction is oriented toward the world that students will inhabit in the future. Fewer than half (48 percent) of teachers in the 1994 *HSTW* Teacher Survey said their "most important objective for career-bound students" was to motivate them by getting them to apply skills and knowledge in solving real problems in their vocational studies.

Career-Bound Students Improve Their Reading, Writing, and Research Skills in a Career-Related Portfolio Project

A semester-long emphasis on careers in a college preparatory-level English course at Kent County Senior High School in Worton, Maryland, heightens career-bound students' interest in reading and writing and builds their communication skills for the future. One student who shared his project portfolio with a potential employer realized a lifelong dream of becoming a radio personality.

"The reading skills required for this project are multi-faceted and can be very sophisticated," said Herman Gay, instructor for the 11th-grade English course. "Students learn to scan documents for specific information and to read detailed instructions for completing the 12 sections of the project." Gay helps students see connections between reading skills learned in school and those needed by real workers. He points out that health care professionals have to read medical records and patients' charts and that food service employees have to scan recipes and grocery lists for needed ingredients.

Some of the project activities include an autobiographical essay, a résumé, a self-assessment essay, a description of job opportunities, profiles of two- and four-year postsecondary institutions, and an annotated bibliography for a career field. The students prepare final copies of the sections in the school computer lab and insert them into loose-leaf notebooks complete with introductions and tables of contents.

"Students who want to produce a polished portfolio must be able to read and understand the project guidelines," Gay said. As students become immersed in the project, they see its importance to their lives. "They begin to realize that the portfolios represent how they will appear to others," he said.

Students conduct a great deal of research in preparing the portfolio items. Their sources of information include reference books, newspaper articles, and college directories. After they gather the information, they create outlines and write draft versions of documents for the various sections.

Student interaction comes into play, also. Students work together to gather information, write letters of recommendation for each other, and proofread and critique each other's portfolio entries.

High-Scoring *High Schools That Work* Sites Use Different Instructional and Guidance Strategies

School leaders and teachers who want to improve students' reading achievement need to pay attention to school and classroom practices at higher-achieving schools. Vast differences exist in instruction at high-scoring and at low-scoring sites.

Student Assessment reports suggest that more teachers at high-achieving schools give career-bound students more challenging assignments and use a greater variety of instructional approaches to engage students in learning. More teachers at high-achieving schools see their students as active learners and themselves as facilitators of learning.

Reports by students recounting school experiences at these sites revealed that high-scoring schools:

- Require students to read more books and articles on science;
- Require students to prepare more written reports and to make more oral reports in science;
- Require career-bound students in English classes to read more books, write more research papers, and make more oral reports on information they gather and synthesize.

High-scoring schools get more career-bound students to complete more English courses from the college preparatory curriculum. They also hold career-bound students to higher standards. High-scoring schools:

- Get more career-bound students to complete up to an hour of homework daily;
- Expect career-bound students to work harder;
- Enroll more career-bound students in higher-level English courses;
- Maintain high standards in all English courses, including basic and general courses.

Information from students suggests that high-achieving schools are offering more quality vocational courses. High-achieving schools have vocational programs that are creating learning activities requiring students to use their academic skills to complete challenging projects. More career-bound students at high-scoring than at low-scoring *HSTW* sites in 1994 reported that:

- Their teachers stress reading and writing;
- They are frequently required to read technical manuals in vocational classes;
- They use a computer to complete vocational assignments.
- They are required to prepare and deliver more oral presentations in vocational classes.

High-scoring schools involve career-bound students and their parents in a guidance system that helps them plan a program of academic courses and vocational studies leading to a career and further education. More career-bound students at high-scoring schools than at all new *HSTW* sites reported that they:

- Received the right amount of encouragement to take a combination of academic and vocational courses;
- Received the right amount of information and counseling about further education;
- Received the right amount of help in finding employment after graduation.

High-scoring schools outperform low-scoring schools in providing challenging course work; in involving students actively in reading, organizing, and presenting information; and in guiding and advising their students.

Students do not mind working hard when they have a reason or a purpose for doing so. In fact, many students have jobs while attending high school. (Unfortunately, only 40 percent of employed students who took part in the reading assessment at new *HSTW* sites in 1994 said their jobs related to what they were studying in high school vocational courses. Seventy-six percent said they received almost no on-the-job training.)

After students graduate from high school, they will read and write for a variety of purposes. Therefore, teachers need to help students understand these purposes and the connections between what is learned in school and what will be expected in the future.

Many teachers are not doing enough to help career-bound students bridge the gap between high school and the workplace. In fact, fewer than half (45 percent) of teachers in the 1994 Teacher Survey said they feel it is "very important" to help students make realistic plans for work and further education. Fifty-four percent of teachers said they never meet with students and parents to develop a program of study. It is difficult for many high school teachers to encourage students to work hard if they are uninvolved in helping them set goals, or if they do not believe students have goals.

High school leaders wanting to improve the reading achievement of career-bound students will help them connect school work with goals in life. They will also ensure that all teachers make a commitment to prepare these students for the future.

School and Classroom Practices Can Offset the Impact of Socioeconomic Status and Racial/Ethnic Identity on Students' Reading Achievement

School leaders and teachers at some new *HSTW* sites need to re-examine the belief that schools would be better if they had a different group of students. SREB compared the achievement of students who belonged to four categories of socioeconomic status and racial/ethnic identify at high-scoring and low-scoring[9] new *HSTW* sites. The four categories of schools studied are those with low parental education/ low minority representation; high parental education/low minority representation; low parental education/high minority representation; and high parental education/high minority representation.

The comparison revealed a broad range in reading achievement among career-bound students at high schools with similar proportions of students with comparative backgrounds (see Table 11). This analysis suggests that school leaders and teachers at low-achieving sites need to look for reasons other than the racial/ethnic and socioeconomic backgrounds of students as causes of poor reading performance. The causes may have more to do with whether these students are provided with a challenging curriculum and given adequate support.

[9] Low-scoring sites are high schools whose students scored in the lower 33 percent of all schools administering the *High Schools That Work* Student Assessment in reading in 1994.

Table 11

Comparison of Career-Bound Students' Average Reading Scores by Socioeconomic Status and Racial/Ethnic Identity at High-Scoring and at Low-Scoring New *HSTW* Sites

Low Parental Education/ Low Minority Representation		High Parental Education/ Low Minority Representation		Low Parental Education/High Minority Representation		High Parental Education/High Minority Representation	
High-Scoring Sites	Low-Scoring Sites	High-Scoring Sites	Low-Scoring Sites	High-Scoring Sites	Low-Scoring Sites	High-Scoring Sites	Low-Scoring Sites
276.4 (1.2)	254.0 (1.0)	277.5 (1.1)	252.6 (3.4)	278.7 (2.4)	249.5 (1.0)	275.2 (1.2)	253.2 (1.0)

Note: *Low parental education* means that some parents did not complete high school, some completed high school, and a few received minimum training after high school. *High parental education* means that all parents completed high school and one or more years of study at a postsecondary institution.

Low minority representation means that the school enrollment included 80 percent or more white students. *High minority representation* means that the school enrollment included 32 or more percent minority students.

Differences in scores at high-scoring and at low-scoring sites are statistically significant at the .01 level. The numbers in parentheses are standard errors.

Student Achievement Reflects Teachers' Beliefs and Expectations

Teachers' perceptions of career-bound students at new *HSTW* sites are very low. Only 33 percent of vocational teachers at these schools said that they would feel comfortable recommending 60 percent of their students to employers as "highly competent," yet they continue to give the rest a passing grade.

The *HSTW* Teacher Survey shows that teachers at new *HSTW* sites do not think their students possess basic language arts skills (see Table 12). The proportion of teachers who said their students had fully mastered basic language arts skills was only nine percent in reading, four percent in writing, and five percent in speaking and listening. Only one-third of the teachers felt that students' skills in these areas were satisfactory. The bottom line is that teachers think one-half to two-thirds of career-bound students need to improve their language arts skills.

Teachers report that only a small number of career-bound students always or frequently display the ability to write well, solve complex problems, concentrate, and read and understand instructions. Yet, teachers at new *HSTW* sites do not ask these students to do assignments that will advance their communication skills, and only one-third of surveyed teachers report that they constantly emphasize any of these skills in grading students' work (see Table 13). Students will not be able to comprehend challenging assignments and organize information from several sources unless all teachers emphasize these skills in the classroom.

Table 12
Teachers' Ratings of Percent of Career-Bound Students Meeting Different Levels of Language Arts Skills

	Percent of students having mastered basic skills	Percent of students having gained satisfactory basic skills	Percent of students needing to improve basic skills
Reading	9	39	52
Writing	4	27	68
Speaking and listening	5	34	61

Note: Because reading skills are closely associated with writing, speaking, and listening, this table presents responses from all four language arts areas.

Source: 1994 *HSTW* Teacher Survey

Given the fact that the reading skills of many career-bound high school graduates are inadequate for continued learning at a postsecondary institution or in a work setting, why do so many high schools continue to set low standards for these students? This condition exists even though evidence shows that many high schools are able to get career-bound students to read and comprehend at a much higher level.

Henry Levin, director of the Center for Educational Research at Stanford University, says too many schools follow the "villain's strategy" of identifying certain students as at risk, labeling them as slow learners, setting no educational goals for them, and slowing down instruction. Schools in Levin's Accelerated Schools Program expose all students to a challenging program of study that engages them in rich discourse, scientific reasoning, and mathematical analysis.

Table 13
Comparison of Teachers' Perceptions of Career-Bound Students' Abilities with Reported Emphasis of Those Abilities in Grading

	Percent of teachers reporting that their career-bound students exhibit certain abilities all of the time or frequently	Percent of teachers reporting that they constantly emphasize certain abilities in grading their students
Ability to write well	16	28
Ability to solve complex problems	16	26
Ability to concentrate	27	27
Ability to read and understand written and verbal instructions	35	43

Source: 1994 *HSTW* Teacher Survey

Students' Writing Skills Improved Dramatically After the New Castle County (Delaware) School District Raised Standards to the Level Recommended by Business

Over 450 representatives from the Wilmington, Delaware, business community participated in helping the New Castle County (Delaware) Vocational-Technical School District raise the standards of its academic and vocational programs to the level of knowledge and skills needed by employees in today's workplace. The business community's recommendations established the seriousness of preparing students for employment and added credibility to school and classroom changes proposed by the school district to the board of education and the community.

One major change was in the area of communications skills, specifically writing skills. Five years ago, students from the district's three vocational-technical schools scored lowest among all students in the state in writing. "Conversations with the business community regarding the level of communication skills needed in today's marketplace created a sense of urgency for making changes in our instructional delivery," said Superintendent Dennis L. Loftus of New Castle County. "By including the majority of our academic and vocational teachers in the discussions with business leaders, we were able to show them that the workplace is a complex environment that demands high-level communication, calculation, and problem-solving skills," Loftus said.

In raising standards, the district launched an intensive program designed to improve students' writing skills. Students complete a designated number of major writing assignments each year. (The number varies from six to eight, depending on the grade level of the student.) Their work is placed in a portfolio that shows whether they met the standards for each assignment and how much their writing improves during the year. Students know what they are expected to do and can see their progress and need for improvement in their portfolios.

As a result of this concentration on writing, two of the district's three schools moved from last to second and third among all high schools in the state in writing achievement in a period of only three years.

"As business and industry raise their standards, they expect us to send them better-prepared students. Therefore, we in education need to raise our bar, too," Loftus said.

To raise the achievement of all students, school leaders and teachers need to join with parents, employers, and community and technical college leaders in reaching consensus on what high school graduates should be able to do in using, processing, and communicating information. They should then proceed to benchmark current school and instructional practices against those of higher-achieving schools and to develop an action plan for improving students' achievement.

School Leaders and Teachers Need to Take Action

In the instructional picture that emerges from student and teacher surveys at new *HSTW* sites, reading is absent. Clearly, reading is not being used adequately to engage students in gaining, organizing, and presenting information and in completing projects and making products in academic and vocational classes. Furthermore, students who need the most

improvement are most likely to be sentenced to the boredom of isolated drills and repetitive tasks. All students need and deserve thoughtful and challenging instruction.

Students who cannot use the printed word in thinking, organizing written materials, and defending an opinion receive less than an adequate education. They should read regularly in all courses and use what they read to communicate with others and to do challenging projects.

Changes in instruction are needed on many levels—in administrative policies, in the classroom, and in the book bags that students carry home—if students are to become good readers.

Administrative Strategies for Improving Reading Achievement

School administrators need to take the lead in developing and implementing a plan to advance the reading skills of career-bound students. Administrators can:

- **Provide all teachers with extensive staff development in using reading and writing across the curriculum.** Most teachers do not know how to use reading and writing strategies to improve students' understanding of subject matter. To improve reading achievement, schools must provide staff development in techniques for getting students to read and write in all content areas.

Reciprocal Teaching Encourages Active Reading

Some teachers use a method known as reciprocal teaching to model active reading. (Reciprocal teaching is described by A.S. Palincsar and A.L. Brown in "Interactive Teaching to Promote Independent Learning from Text," *The Reading Teacher,* 39 (1986), 771-777.)

In reciprocal teaching, the instructor alternates with the students in thinking aloud concerning a written passage. The passage may be a paragraph, a section, or a group of texts. The teachers and students may use the following techniques:

Previewing. "From the summary of Section 1 on lumber defects, it appears that we need to determine how a blemish affects the appearance, durability, and strength of wood. Look at the summary of Section 2. What do we need to know before we finish it?"

Deciding What Is Important. "I think the main point of the first paragraph is that anger regarding taxation was one cause of the American Revolution. Read the next paragraph, and find out what it tells us about the revolution."

Connecting with Previous Reading. "This section presented five characteristics of algae. How does this compare with what we have learned about fungi?"

As students take turns reflecting on the passages, the teacher comments on the strengths of their responses. He/she also addresses their weaknesses by modeling a more adequate response. When students become familiar with the process, they begin to teach each other. This process is effective in extra help programs as well as in class.

- **Provide teachers with shared planning time for developing collaborative learning activities.** Vocational teachers do not need to work alone to help students become active readers. Collaboration between vocational teachers and English teachers offers unlimited opportunities for students to use written materials to explore vocational areas.

- **Ask high school English departments to revise and redesign English courses for career-bound students.** Since these students may have weaker information processing skills, they need a high school English curriculum that requires them to read, write, organize, reflect, and present written materials. No successful football coach with six strong offensive players would require them to practice hard on demanding game-like drills while allowing weaker players to practice less on other drills.

This is precisely what high school English departments are doing. They hold the best students to high standards, expect them to do school work outside of class, and require them to analyze and organize information into written and oral reports. Meanwhile, they expect students with less developed skills to make less effort. They do not ask these students to respond critically and personally to written materials.

It is time for high school English departments to develop standards that require career-bound students to exert the same amount of effort as other students. To prepare for the workplace, career-bound students need to be able to read, analyze, organize, write, and speak. These students may focus on work-related topics, but they need the same level of communication skills as other students.

- **Communicate to teachers, students, and parents that reading(in class and in daily homework assignments) is mandatory in all subject areas.** Students and parents need to know that expectations have been raised and that provisions have been made to help students meet higher standards. Vocational teachers, in particular, need encouragement in incorporating reading and writing into their courses. Principals and state and local vocational leaders may need to revise the vocational curriculum to include more projects requiring individual research in vocational studies.

- **Offer a system of extra help to support students in reading to learn.** Students in general and vocational programs of study are seldom required to read challenging materials, so they need help in doing so. Some instruction can take place in class, but students may need assistance after school and on the weekend as well.

Classroom Strategies for Improving Reading Achievement

A variety of classroom techniques will help teachers engage students in reading and writing to improve learning. Teachers can:

- **Require students to read more and to share what they learn.** Students learn to read by reading—the more, the better. It is also true that reading is the essential medium for sharing knowledge. Teachers can ask students to prepare papers and make oral presentations on what they are learning by reading.

Jigsaw Assignments Encourage Students to Read and Articulate What They Learn

To encourage students to read more and to share what they learn, teachers can make jigsaw assignments. (The jigsaw technique is described by Martha Rapp Ruddell in *Teaching Content Reading and Writing*. Boston: Allyn and Bacon, 1993.)

In the jigsaw approach, students or groups of students study various written passages. The students are then organized into groups that include one student who has read each of the passages. The groups are expected to synthesize all of the readings into one task. For example, the groups might be asked to develop a proposal for doing a particular project in their vocational classes based on five different readings. In another variation, pairs of students might be asked to compare and contrast two products described in written materials. This type of shared assignment prompts students to think about and communicate what they have read.

- **Teach high-level content to all students.** The reading comprehension emphasis that drives the college preparatory curriculum should drive the curriculum for career-bound students as well. All students, not just college preparatory students, should be expected to read at a high level. The vocational curriculum provides a natural setting for students to read and comprehend technical materials that interest them. In doing so, students can improve their information-organizing skills and expand their understanding of a career field.
- **Require students to read and use technical materials in vocational classes.** Professional journals are indispensable for students who want to develop expertise in a career field. Students who read these journals, practice the instructions in technical manuals, and solve problems based on written information will improve their reading skills and their knowledge of a career field. Printed materials can provide the basis for challenging homework assignments that result in better-informed graduates.
- **Have students react to and use what they read.** Students tend to think of reading as a passive process in which the goal is to "get all the facts." To prepare to be lifelong learners in postsecondary education and in the workplace, career-bound students need to read actively for specific purposes. Some of these purposes include preparing reports and making presentations. (Research and report writing are addressed by Donna E. Alvermann in *Content Reading and Literacy: Succeeding in Today's Diverse Classrooms.*

Ask Students to Use What They Read in Completing Other Assignments

In making reading assignments, teachers need to ask career-bound students to do more than memorize facts. For example, students in a class on early childhood development could use what they know about child care to create a brochure for baby sitters of three-year-old children. Students will gain additional information in the process of using what they already know.

Career-Bound Biology Students at Kent County High School in Maryland Read and Write for In-Depth Understanding

Career-bound students enrolled in a 10th grade biology course at Kent County Senior High School in Worton, Maryland, engage in a concept mapping activity that requires them to use reading, writing, thinking, and conceptualizing skills in strengthening their understanding of biological terms. The students consult textbooks, notebooks, and other sources in connecting and organizing pieces of information into a type of outline known as a concept map.

The students begin by reading and discussing a chapter in the biology textbook. The teacher organizes the students into four-person teams and gives them a list of 20 key biological terms to investigate and connect on a map. If the class is studying plant structure, the teams list such plant parts as roots, stems, leaves, and flowers. Then they list the characteristics of each part. For example, a team might record that plants have leaves and that leaves are composed of tissues. After gathering and organizing their notes, each team prepares a concept map on paper or poster board. "There is no right or wrong way to do this activity, as long as the teams connect the biological terms," said Larry Hanisee, head of the science department at Kent County Senior High School. Some teams use all 20 of the terms; others use as few as 15. Every map looks different, depending on the way the teams connect and overlap the terms.

Concept mapping is a good summary activity following two or three days of reading, Hanisee said. "It requires students to conceptualize and to think critically. The result is that students gain a much deeper understanding of a topic."

Hanisee began using concept mapping a year ago as one alternative to lecturing. "Teachers need to use new ways of engaging career-bound students in learning," he said. "In preparing students to live and work in a rapidly-changing world, we cannot afford to remain stagnant in our teaching."

Boston: Allyn and Bacon, 1994.) Reading activities need to give students opportunities to think about the meaning of what they are reading and to decide how to use the information in a variety of circumstances.

- **Integrate reading with writing.** Writing helps students internalize and expand on what they learn from reading. (The connection between reading and writing is addressed by Janet Allen in *It's Never Too Late: Leading Adolescents to Life-long Literacy.* Portsmouth, NH: Heinemann, 1995.) Writing based on reading can take the form of student journals, personal or business letters, written plans for projects, and written summaries. Writing about reading allows students to become creators of ideas and owners of what they have read.

- **Provide a variety of reading formats.** Students need to read materials other than textbooks. Resources should include newspaper and magazine articles, technical manuals, professional publications, letters to the editor, advertisements, and historical documents. A range of formats provides opportunities for students to read for a variety of purposes. It also fosters critical examination of texts: How do authors use different formats to sway their readers? What do authors encourage readers to assume?

- **Use reading for research.** Students need to be able to gain information from a variety of sources. They should become adept at using traditional sources such as dictionaries, almanacs, and encyclopedias as well as modern sources such as data bases and computer networks.
- **Create communities of learners in the classroom.** Offices and manufacturing plants are highly interactive. People use what they read; they share it and make decisions based on it. They do not take multiple choice tests.

Students need to learn to be colleagues in the process of learning by raising questions; setting goals; and developing shared projects, presentations, and reports. When taught in a communicative context, reading can help students make sense of their world.

Journal Writing Allows Students to Interact with the Written Word

Regular entries in a journal are a powerful way for students to interact with the written word. (Journal keeping is described by Toby Fulwiler, ed., in *The Journal Book*. Portsmouth, NH: Boynton/Cook, 1987.)

Examples of journal activities include:

- **Entry Tickets:** Begin class by having students write in their journals. They can answer a question on the previous day's lesson, summarize a homework assignment, or anticipate what they expect to learn from the current day's lesson.
- **Focusing:** Change the pace of instruction midway in the class by asking students make a journal entry. Ask them to summarize the material presented so far, raise questions, take sides on an issue, predict the future, evaluate evidence, or otherwise extend the content being covered.
- **Homework:** Students can use their journals to respond to a question or an idea, make observations about class topics, respond to current issues, or react to reading assignments.
- **Progress Reports:** Journals allow teachers to check on progress by having students reflect on what they do and do not understand.
- **Practice for Tests:** Students can practice for essay tests by writing comparisons, analyses, evaluations, and other thoughtful pieces.
- **Reflection:** Students can use side-by-side columns on a journal page to record a conversation with themselves or with someone else. In this way, students can "talk to themselves" through questions, hypotheses, predictions, speculations, and other exploratory thought processes. They can also record the thoughts of their teachers and classmates. Done on a regular basis, this process encourages intellectual exploration and equips students to go beyond an initial reaction.

The purpose in having students keep a journal is to encourage them to write—the more the better. Teachers can spot-check and comment on journals during a grading period, but they do not have to grade them line-for-line. A quick look can determine if a student is using his or her journal in a productive way. It is more important for students to write than for teachers to read every line.

Teachers Can Help Career-Bound Students Improve Their Reading Achievement

The lowest reading scores by students at new *High Schools That Work* sites in 1994 were in the areas of making a personal response, taking a critical stance, and gaining information. Academic and vocational teachers alike can make assignments that require students to develop these skills. Examples of assignments include:

In English courses:

- Keep a journal that includes personal responses to characters and events in novels and plays;
- Re-write passages in different styles;
- Re-write passages for different audiences;
- Analyze the persuasive techniques used in a variety of essays.

In science courses:

- Compare the methods used in similar scientific experiments;
- Research the scientific claims made for various products in television advertising;
- Make written reports on science projects and experiments;
- Give oral presentations on science research projects.

In mathematics courses:

- Solve complex word problems;
- Collect data on issues and problems related to school studies, use mathematical procedures to analyze the data, and present a written report;
- Analyze the use of statistics in newspaper articles and advertising.

In vocational courses:

- Keep a written record of job shadowing and cooperative work-based learning experiences;
- Research the history of a career field;
- Research technical developments in a career field;
- Read technical manuals and trade journals regularly;
- Research the impact of government regulations on a career field.

Quarterly Checklist for Teachers

Do career-bound students in your classes do these things in each grading period?

- Report on a book or article;
- Keep a journal of their learning;
- Write a research paper;
- Present an oral report based on research;
- Read articles on current events in a vocational or technical field;
- Respond to essay questions on tests.

Students will become good readers if they read regularly, actively, and for meaningful purposes. They will become habitual readers if they develop the habit through daily homework and classroom activities.

Schools are responsible for preparing students for a lifetime of learning, not simply for the next examination in an academic or vocational course. Intellectually challenging instruction requires students to use reading, writing, and oral communication to advance general and specific subject matter knowledge and skills.

SREB-State Vocational Education Consortium
High Schools That Work Program

Goals

- To increase the mathematics, science, communication, problem-solving, and technical achievement and the application of learning for career-bound students to the national average of all students.
- To blend the essential content of traditional college preparatory studies—mathematics, science, and language arts—with quality vocational and technical studies by creating conditions that support school leaders, teachers, and counselors in carrying out the key practices.

Key Practices

- Setting higher expectations and getting career-bound students to meet them.
- Increasing access to challenging vocational and technical studies, with a major emphasis on using high-level mathematics, science, language arts, and problem-solving skills in the context of modern workplace practices and in preparation for continued learning.
- Increasing access to academic studies that teach the essential concepts from the college preparatory curriculum through functional and applied strategies that enable students to see the relationship between course content and future roles they envision for themselves.
- Having students complete a challenging program of study with an upgraded academic core and a major. An upgraded academic core includes at least four years of college preparatory English and three years each of mathematics and science, with at least two years in each area equivalent in content to courses offered in the college preparatory program. The major includes at least four Carnegie units in a career or academic major and two Carnegie units in related technical core courses.
- Providing students access to a structured system of work-based and high-status school-based learning—high school and postsecondary—collaboratively planned by educators, employers, and workers and resulting in an industry-recognized credential and employment in a career pathway.
- Having an organizational structure and schedule enabling academic and vocational teachers to have the time to plan and provide integrated instruction aimed at teaching high-status academic and technical content.
- Having each student actively engaged in the learning process.
- Involving each student and his/her parent(s) in a career guidance and individualized advising system aimed at ensuring the completion of an accelerated program of study with a career or academic major.
- Providing a structured system of extra help to enable career-bound students to successfully complete an accelerated program of study that includes high-level academic content and a major.
- Using student assessment and program evaluation data to continuously improve curriculum, instruction, school climate, organization, and management to advance student learning.

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High Schools That Work

The *High Schools That Work* program is the nation's largest and fastest growing effort to raise the achievement of career-bound high school students. Created by the Southern Regional Education Board-State Vocational Education Consortium, the program includes over 400 school and school system sites in 19 states.

High Schools That Work is supported in part by a grant from the DeWitt Wallace-Reader's Digest Fund.

For more information, contact Gene Bottoms, Director, *High Schools That Work*, Southern Regional Education Board, 592 Tenth St., NW, Atlanta, GA 30318-5790. Phone 404/875-9211.

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