DOCUMENT RESUME

ED 404 539 CE 073 573

TITLE	Outstanding Practices for Raising the Achievement of Career-Bound High School Students. High Schools That Work.
INSTITUTION	Southern Regional Education Board, Atlanta, Ga.
SPONS AGENCY	DeWitt Wallace / Reader's Digest Fund, Pleasantville, N.Y.
PUB DATE	93
NOTE	33p.; For the 1995 and 1996 Outstanding Practices document, see CE 073 574-575. For the 1994 report, see ED 382 814.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Academic Education; Career Education; *Curriculum Development; Educational Change; *Educational Improvement; *Education Work Relationship; High Schools; *Integrated Curriculum; Models; Program Descriptions; *School Effectiveness; Vocational Education
IDENTIFIERS	*High Schools that Work

ABSTRACT

This booklet is the third in a series of profiles of "what works" at high schools in the High Schools that Work program. It contains 42 outstanding practices descriptions arranged in categories representing the key practices of the High Schools that Work program: (1) redesigning and refocusing vocational studies; (2) developing a high school curriculum that meets the standards of the real world; (3) instructional strategies that get students to make the effort to master complex assignments; (4) involving students and parents in planning and achieving an accelerated and coherent program of study; (5) academic and vocational teachers working together to improve student learning; (6) using information to change school and instructional practices; (7) organizing the school to support integration of academic and vocational studies; (8) designing a challenging and focused sequence of academic and occupational studies; and (9) providing students with extra help to meet higher standards. The profiles contain a short description of the strategies and contact information. (KC)

HIGH SCHOOLS THAT WORK

Outstanding Practices for Raising the Achievement of Career-Bound High School Students

592 Tenth St., NW • Atlanta, Georgia 30318 • (404) 875-9211 • 1993

SREB

Southern Regional Education Board

Table of Contents

Putting Outstanding Practices to Work in Your School

The Southern Regional Education Board is actively engaged in assisting a network of 329 sites in 19 states to raise the achievement of career-bound high school students. The *High Schools That Work* program provides technical assistance, staff development, communications/publications, and assessment services aimed at helping high schools change the way they prepare the "other"
students.

The purpose of this publication is twofold:

- to help you improve the way your high school prepares career-bound students;
- to help you network with other educators—sharing ideas and strategies back and forth—as you build a stronger foundation for these students.

The *1993 Outstanding Practices* publication is the third in a series of profiles of "what works" at high schools in the program. If you do not have copies of the first two publications, you will want to request them. Together, these three volumes represent over 120 accounts of ways high schools are making a difference in the lives of career-bound students.

Networking is the key to putting outstanding practices to work in your school. I encourage you to use this publication regularly as you re-shape school organization and practices. Order additional copies from SREB—or make photocopies—to share with teachers, counselors, and school leaders. Urge them to review the practices, select the ones that interest them, and phone the contact persons for more information.

The *Outstanding Practices* descriptions are arranged in categories representing the key practices of the *High Schools That Work* program. For example, if you want to know how other schools are redesigning and refocusing vocational studies, simply turn to that section.

Many administrators refer to the annual *Outstanding Practices* publications as they create a new organizational structure in which teachers and students work together and plan together over a period of time. Many academic and vocational teachers use the publications in designing curricula and methods for helping career-bound students attain new heights.

Now is the time to plan for the coming school year. Students entering the ninth grade should have opportunities to involve their parents with their teachers in planning a challenging four-year program of study. Next year's seniors should be encouraged to schedule high-level math and science courses that will provide them with a springboard of problem-solving skills for jobs and education in the future. Teachers should begin meeting to plan senior projects that will "stretch" students in new directions and to new levels.

The summaries in this publication were gleaned from presentations at the Annual *High Schools That Work* Staff Development Conference, technical assistance visits to *High Schools That Work* sites, and Outstanding Practices submitted by *High Schools That Work* teachers, counselors, and administrators. We urge leaders at new and established *High Schools That Work* sites to consider the effective practices at your school and to submit information to SREB for the 1994 publication. (Forms are available from SREB.) We look forward to sharing your success with high school educators who constantly seek better ways to equip career-bound students for employment and further education.

Gene Bottoms, Director
***High Schools That Work* Program**
October 1993

Redesigning and Refocusing Vocational Studies

School Uses Multiple Strategies to Integrate High-Level Math and Science into Vocational Studies

Central Area Vocational-Technical School in Drumright, Oklahoma, utilizes a number of strategies to blend academic and vocational studies: requiring applied math and science for students in certain vocational courses; using current topics or "themes" in academic and vocational courses; exchanging academic and vocational teachers; and involving business and industry. Principles of Technology (applied physics) is an integral part of a three-hour daily block in seven courses: electronics, robotics and automation, commercial electricity, air conditioning, auto mechanics, cycle mechanics, and computer repair. A technology math lab instructor works directly with vocational instructors to integrate applied math into six program areas: auto mechanics, diesel mechanics, air conditioning, robotics, electronics, and machine tool technology. The academic teachers relate math or science concepts to what students are learning in the occupational areas.

Learning specialists in the school's applied technical skills lab relate all academic studies to vocational instructional areas. For example, specialists working with carpentry students will explain math in terms of "rafter length." The school also uses "centers of concentration" to carry out a theme, such as pollution, in academic and vocational courses: Students study emission control in auto technology, discuss pollution legislation in social studies, examine the dangers of pollution in science, and write English class term papers on pollution.

Teacher "swapping" occurs when an academic teacher, a technical lab teacher, and a vocational teacher work together to develop lesson plans and then change places in the classroom for a period of time. Business and industry boost the academic and vocational integration effort by providing examples of job functions that require math, science, and communication skills, and by sharing copies of employment tests based on knowledge of math, science, reading, and writing. Companies allow students and teachers to "shadow" employees to discover and report what a worker needs to succeed on the job.

Even though it is a rural school, Central AVTS leads the state in retention of students in vocational programs and in placement of graduates in good jobs. As proof that integrated academic and vocational studies contribute to better thinking and problem solving skills, the school had 12 winners in the national Vocational Industrial Clubs of America Skill Olympics. The school is conducting two U.S. Department of Education projects to demonstrate that vocational education can keep students in school and can help them be more successful after graduation. The school also received a Department of Education grant to disseminate information on successful school-to-work transition.

Contact: Phil Waul, Assistant Superintendent
Central Oklahoma Area Vocational Technical School
3 Court Circle
Drumright, OK 74030-9613
Phone: 918/352-2551

High School Redirects Vocational Courses from Traditional to Highly Technical

School officials have created an "oasis" of technical learning for students at **Avery County High School** in Newland, North Carolina. Former vocational classrooms were remodeled into a modern Technology Center with labs where students learn skills for career fields that exist in the real world, for example plastic injection molding, robotics, computer-driven mills and laths, pneumatics, technical drafting, and electronics. A computer lab with 12 work stations helps students relate applied geometry to technical drafting. A fully-equipped metals technology lab—incorporating the former welding course—allows students to study the properties of metals. The center also includes a communications lab where students access information via computer and use desktop publishing to prepare brochures, posters, and other printed materials.

Ninth and tenth grade students enroll in "foundation" courses to learn how to use computer-controlled mills and lathes and how to use geometric principles, such as right angles and ratios, to produce plastic, metal, and wood products. Before computers, these jobs were done by hand. Eleventh and twelfth grade students combine audio, video, and special effects to produce high-tech audiovisual productions in a complete multimedia studio. To show off what they are learning, the students demonstrate their technology skills at an open house for parents.

The Technology Center is part of Avery's tech prep program, which includes applied academic courses in math, science, and communication; high-tech vocational studies; staff development for all teachers; and career planning for all students. From 1990 to 1993, the school dropout rate was cut in half; SAT scores improved more than 100 points; average daily attendance exceeded 95 percent; and scores on physics core competency questions improved significantly. The number of students taking Algebra I increased 75 percent; the number taking physics increased 25 percent; and enrollment in Principles of Technology (applied physics) doubled in only a year. The number of graduates continuing their education after high school has increased steadily.

Contact: Will Burgin, Director of Technology and Applied Education
Avery County Schools
P.O. Box 1360
Newland, NC 28657
Phone: 704/733-1742

Using Related Vocational/Technical Courses to Improve Vocational Studies

Sussex Technical High School in Delaware is redesigning and refocusing its vocational courses. In the past, Sussex students selected a traditional vocational field, such as auto mechanics or carpentry, and received three periods of instruction in the field in each of three years. In response to the need for workers who can solve problems and adapt to modern workplace conditions, Sussex Tech began requiring students to complete an upgraded academic core and is making major changes in the vocational curriculum. Teachers and administrators at Sussex Tech realize that the old way of teaching vocational courses is too narrow for today's demands.

Beginning in ninth grade, all students take an Introduction to Technology course. The course includes six labs in which students are introduced to the technology and career paths of nine occupational fields. Each student selects a field, such as construction or office technology, to study in grades 10-12. In addition to a two-period technical specialization, all students in grades 10-12 enroll in two one-semester related technical courses. For example, carpentry students expand their job skills by enrolling in courses such as blueprint reading/sketching, computer applications, cost estimation/work measurement, applied technology, electrical fundamentals, basic mechanical systems, site preparation/building layout, human/customer relations, small business management, and organizational leadership. Courses for students in marketing education include computer applications, computerized accounting, sociology, graphic productions, organizational leadership, computer maintenance/repair, desktop publishing, and applied technology. Students are extremely positive about the "customized" program of study.

In the past, students often had to choose between similar career paths, for example, marketing and business/computer programs. Now, they blend technical specialization and "related" technical courses to meet their needs and interests. The new program is a big step toward the school's goal of computer literacy for every graduate. All students take a semester of keyboarding in the ninth grade; now they can follow it with a very popular course in computer applications.

The staff will meet during the 1993-94 school year to evaluate the "related" courses and to consider new courses, such as materials science, hazardous materials, advanced computer applications, computer programming, and photography.

Contact: Carol C. Schreffler, Director of Instruction
Sussex County Vocational-Technical School District
P.O. Box 351, Rte. 9
Georgetown, DE 19947
Phone: 302/856-2541

Three-Year Career Academy Program Combines Math, Science, and Technology

A new technology education program in the **Boyertown Area School District** in Boyertown, Pennsylvania helps students understand and contribute to today's increasingly high-tech society. The program combines math, science, and technology in three courses. A few of the "cutting edge" topics covered in the program include hydroponics, health care, waste management, and food processing in Bio-Related Technology (10th grade); manufacturing, construction, energy, and transportation in Physical Technology (11th grade); and data bases, satellite communications, electronics, and photography in Information and Communication Technology (12th grade).

This new broad-based career academy is a cooperative effort by the school district and Drexel University to redesign the educational program for students who are not majoring in either college prep or tech prep. The first course—Bio-Related Technology—is being piloted in the 1993-94 school year; all three courses will be implemented by 1996-97. The "common threads" in this effort are: use of academic knowledge and skills, career development, higher order thinking skills, connection to real world problems, use of technology tools, and orientation toward quality. Bio-Related Technology is taught by math, science,

and technology teachers in a daily three-hour block that allows for in-depth projects and active student participation. Teachers from other disciplines provide instructional support to give students a well-rounded learning experience. Students completing the course will earn credits in math, science, and technology.

The school district is renovating Boyertown Area High School to create a technology education floor, and teachers are involved in curriculum development and staff development. Drexel University is providing support in program development, curriculum development, staff development, and assessment. The assessment system will include analysis of student portfolios, written testimony, and indicators such as transcripts, test results, and personal resumes. The Boyertown integration project is preparing a large group of students to participate successfully in a changing technological society.

Contact: John Y. Stoudt, Project Co-Director
Boyertown Area School District
Fourth and Monroe Streets
Boyertown, PA 19512
Phone: 215/369-7445

Materials You May Want to Request

The Agricultural Education Service Bulletin from the Great State of Tennessee—Published annually by the Agricultural and Extension Education Department at the University of Tennessee, this bulletin contains news, information, computer software sources, humor, and inspiration for agricultural teachers and administrators. The August 1993 issue contained an article by John D. Todd, a UT professor, on the importance of an agricultural education curriculum that blends "science, mathematics, communication skills, and other academics with the latest principles and philosophies in agriculture." The article includes five suggestions for getting started. Copies of the bulletin are available on request.

Contact: John D. Todd, Agricultural and Extension Education
University of Tennessee
201 Morgan Hall
P.O. Box 1071
Knoxville, TN 37901
Phone: 615/974-7371

Developing a High School Curriculum that Meets the Standards of the Real World

"Shadowing" Program Gives Teachers On-the-Job Experience in Business and Industry

Teachers at **Trigg County High School** in Kentucky spend one to two days "shadowing" full-time employees at local companies in this program that brings education and business together to focus on the needs of students. The program helps teachers see the necessity of helping career-bound students master complex academic concepts. It also provides examples of how to make academic learning applicable to the real world. Teachers learn company policies and procedures, organizational structure, basic company operation, and job opportunities for career-bound high school graduates.

Participants select "shadow" jobs and professions that relate to what they teach: a hospital setting for science or communications; a law office for business technology or language arts; a pre-school facility for child care. As an outgrowth of the program, business leaders visit the school to discuss job requirements; teach job skills; serve on advisory committees; give input on curriculum, facilities, and equipment; and serve as resource persons for demonstrations, speeches, and evaluation.

In written evaluations, teachers indicate that "shadowing" is a useful and enlightening experience—and ask for more time "on the job." Company supervisors report whether the teachers seemed motivated, were able to do the level of work required of other "employees," worked well with others, followed company policies, and contributed to the improvement of some phase of company business. Employers praise the program for improving relationships between the company and the high school.

Contact: Joyce S. Bozarth, Business Education Teacher/Tech Prep Coordinator
Trigg County High School
203 East Main Street
Cadiz, KY 42211
Phone: 502/522-2215

Business and Industry Advisory Council Works Hand-in-Hand with *High Schools That Work* Steering Committee

The Business and Industry Advisory Council and the *High Schools That Work*/Tech Prep Steering Committee for **Dorchester School District Two** in Summerville, South Carolina, have joint meetings, activities, and discussions aimed at helping teachers improve the performance of high school students. The two groups—each composed of school administrators and teachers and business and industry representatives—meet in August, September, October, and/or November or February to coordinate private sector input with instructional goals and strategies. As a result, the school district has implemented instructional changes—such as moving toward eliminating the general education track—recommended by the combined group. The business leaders make presentations to teachers and students, conduct an *Educators in Industry* program, and participate in public relations activities. A business/industry representative is chairman of the combined group, and a school district staff member serves as secretary. Companies represented on the council/committee include Westvaco, Briteline Extrusions, IBM, Robert Bosch Corporation, and *The Summerville Journal Scene.*

Contact: Barbara Villeponteaux, Director of Secondary Education
Dorchester School District Two
102 Greenwave Boulevard
Summerville, SC 29483
Phone: 803/873-2901

Portfolio Assessment Helps Students Demonstrate Academic and Vocational Competencies

Assessing student portfolios is a relatively new method to measure student progress and identify strengths and weaknesses. A portfolio, which may be a spiral or looseleaf notebook or folder, contains samples of a student's best work over a period of time. Portfolios often

contain photos and/or videotapes, known as "action resumes," that portray students' skills or projects. By looking at earlier work, students are able to see how much they have progressed. For example, students can see that their writing has improved or that their employability skills need more attention. As they develop their portfolios, students demonstrate their ability to think critically, solve problems, gauge their preparation for school and work, and communicate their competencies to teachers and employers.

All seniors at **Newport Area Vocational Technical Center** and selected students at **Rogers High School**, both in Newport, Rhode Island, complete a portfolio in an academic course, for example English or science, or in an occupational class. A teacher assigns the project, but students have primary responsibility for maintaining their portfolios. In addition to self-assessment, students engage in "comparative assessment" with teachers who help evaluate the portfolio contents. One student said, "Making a portfolio helps you think about how much you have learned." Another student noted that a portfolio helped him get a job.

Contact: Mary Canole, Director
Newport Area Vocational Technical Center
Wickham Road
Newport, RI 02840
Phone: 401/849-3608

English Students Learn That "Money Matters" in the Real World

A veteran English teacher at **Floyd County Technical High School** in Martin, Kentucky, combines communication studies with financial and computer studies to help students prepare for a world in which "take-home pay" is vastly different to total salary. In a project called *Money Matters*, students learn to figure gross pay, calculate payroll deductions, manage a checking account, write finance-related business letters, and compute income taxes. They discover that minimum wage is not enough to pay the bills in today's economy. Even students who have jobs do not know why certain amounts are deducted from their paychecks and how the amounts are calculated. Each student is assigned a different hourly rate of pay so that no answers are the same. Students use computers to figure regular time and overtime wages, federal and state income taxes, social security taxes, health and life insurance, union dues, and savings. They put a month's salary in the bank, write checks to pay monthly bills, and deal with an unexpected bill known as the "calamity of the month." Each student writes a letter to explain that a bill has been paid, to order a part for a piece of equipment, and to complain about a product's performance. Students learn about W-2 and W-4 forms and fill out income tax forms. *Money Matters* really attracts the students' attention. They are more interested in English and spend a great deal of their own time on the project. More students than usual complete the activity.

Contact: Thomas Hardwick, English Teacher
Floyd County Technical High School
HC 79, Box 205
Martin, KY 41649
Phone: 606/285-3088 or 606/285-9861

Academic and Vocational Teachers at Summer Institute Explore Career Opportunities for Students in Local Businesses

Academic and vocational teachers bonded with each other and with the business community in a summer institute co-hosted by **Nash-Rocky Mount Schools** in Nashville, North Carolina, and the local Chamber of Commerce. Thirty-three teachers and 12 area businesses participated in the program designed to help educators understand the career opportunities that exist in the community. The teachers toured work sites and then met for two days to develop curriculum projects based on their workplace experiences. The institute concluded with a discussion between the teachers and members of the Chamber's Career Awareness Education Subcommittee. Teachers were enthusiastic: They appreciated an opportunity to see "where the jobs are" and what those jobs require; they envisioned "shadowing" programs and other activities with their new business partners; and they vowed to use the educational resources of the Chamber of Commerce to enrich their classes.

Contact: Cheryl Rice, Director
Vocational-Technical Education
Nash-Rocky Mount Schools
930 Eastern Avenue
Nashville, NC 27856
Phone: 919/459-5258

Students Use Personal Computers to Learn Algebra Concepts

Computer-Intensive Algebra (CIA) is a hands-on, technology-based curriculum for eighth and ninth grade algebra students at **Fairdale High School** in Fairdale, Kentucky. Working with tables, graphs, and symbols, CIA students gain an understanding of important mathematical concepts while connecting what they learn to significant real-world situations and problems. Students engage in classroom discussions, computer exploration, and data collection. The teacher is a facilitator or "coach," and the students work in pairs at personal computers and in pairs or small groups during data gathering activities. The course also includes a writing component: Students make notes on the patterns they observe in their computer explorations and write detailed reports on the results of their problem solving. Since the questions are open-ended, the teacher and the students can expect a variety of correct responses. Several comparisons of the computer-based curriculum with Algebra I suggest that CIA students out-perform traditional course students in a number of key areas and perform as well as or better than traditional algebra students on tests of standard Algebra I skills. CIA students are able to move back into a conventional curriculum for the remainder of their high school math. Mary Creech, who teaches CIA at Fairdale, likes the fact that every problem in the course is an application, not just an equation. "Students create the equation to fit the situation," she said. Computer-Intensive Algebra was developed at the University of Maryland and The Pennsylvania State University with funds from the National Science Foundation.

Contact: Mary Creech, Math Department Chairman
Fairdale High School
1001 Fairdale Road
Fairdale, KY 40118
Phone: 502/473-8248

For content information, contact Jim Fey at the University of Maryland, 301/405-5134, or Kathy Heid at The Pennsylvania State University, 814/865-2430. For materials or licensing information, contact the University of Maryland, Office of Technology Liaison, 4312 Knox Road, College Park, MD 20742. Phone: 301/405-4209.

Instructional Strategies That Get Students to Make the Effort to Master Complex Assignments

Students Learn Chemistry Through Food and Nutrition

Students in a Nutritional Chemistry class at **Jackson County High School** in McKee, Kentucky, conduct experiments on a favorite topic—food—to gain an understanding of complex chemical concepts. The class is taught by a home economics teacher and a chemistry teacher working together. A major goal of the course is to introduce students to equipment, scientific processes, accuracy/precision, and computation techniques used in a chemistry lab setting. All topics covered in class, including nutrition, food preparation, and food processing, are reinforced in labs. The students average at least two experiments a week, using equipment and chemicals from the chemistry department. They write lab reports, compare their data with findings by other students, and use the data to construct graphs and data tables. Each student formulates written conclusions based on the data. In addition to learning chemistry in a contextual way, the students identify career opportunities in nutritional chemistry and related fields.

As a result of this "non-threatening" course, students are less apprehensive about taking chemistry, and several students have enrolled successfully in a regular chemistry class.

Contact: Diana Miller, Nutritional Chemistry Teacher
Jackson County High School
P.O. Box 427
McKee, KY 40447
Phone: 606/287-7155

Teacher Uses Creative Approach to Cover Applied Math Modules

For the past two years, students at **Johnson High School** in Gainesville, Georgia, have successfully completed all 18 modules of CORD Applied Math I. To do this, the teacher selects one lab and a sampling of exercises from each unit. She divides the problems into A, B, and C categories—from least to most difficult. The "A" problems can be used for an individual quiz grade, while a few of the "C" problems are used as examples. One "B" problem from each category is assigned to a group of students in a one-day cooperative learning activity. Each group works on a different problem in order to cover a wider variety of applications. Problems that are not covered are used to make up labs or other work that students miss. Students are graded on labs, problem solving, and note-taking. The lab grades are based on correctness and participation. For problem solving, all students do the problems, but combine their papers with those of the group for a group grade. The note-taking grade is an incentive for students to pay attention. While students are putting away

their books and calculators, the teacher takes a quick look at each student's work for the day and gives a grade based on the notes taken.

If they attend class regularly, all career-bound students pass the applied course, including those who did poorly or failed in traditionally-structured math classes.

Contact: Melissa E. Stewart, Mathematics Teacher
Johnson High School
3305 Poplar Springs Road
Gainesville, GA 30505
Phone: 404/536-2394

Senior Project Prepares Students for Real Life After High School

A challenging senior project for English students at **McKenzie Career Center** in Indianapolis, Indiana, is titled *The Budget*. The project combines communication, decision-making, critical and analytical thinking, and organizational skills. Students receive a make-believe "salary" for a fictitious entry-level "job." They develop a budget for food, clothing, shelter, utilities, medical expenses, transportation, insurance, other purchases, and savings. They also plan menus, make a shopping list, and fill out a chart that shows actual choices. Through contact with local businesses, agencies, and retail stores, the students justify their budget figures, provide pictures of items they plan to "buy," and prepare a report of real costs. "Fender bender," "extraction of wisdom teeth," and "apartment rent increase" are "wild cards" that upset the fiscal plan and send students scurrying to find dollars in the budget for these unexpected, emergency expenses. The project helps career-bound students develop communication skills as consumers and clients dealing with the public. Parents praise the project, saying it opens their children's eyes to the possibilities and situations of everyday life.

Contact: Jane Davis Miller, Career English Teacher
McKenzie Career Center
7802 Hague Road
Indianapolis, IN 46256
Phone: 317/576-6420

Art Teacher and Business Teacher Team Up To Teach Desktop Publishing/Computer Graphics

At **Edgewater High School** in Orlando, Florida, an art teacher and a business teacher offer desktop publishing/computer graphics in a two-hour block in the business lab. The objective is to help "average" students produce professional quality publications using up-to-date equipment and techniques. The business teacher does not have an art background, but knows graphics software. The art teacher does not have a computer lab, but knows design and layout concepts. Working together, teachers and students have been successful. Students keep portfolios of their graphics projects, and an advisory council of local professionals review the portfolios and make suggestions for improvement.

Contact: Judy Varblow, Business Education Teacher
Edgewater High School
3100 Edgewater Drive
Orlando, FL 32804
Phone: 407/849-0130

Students Write "Contracts" for Work They Plan to Complete in Computer Management Class

Students in Computer Management at **Southern Nevada Vocational-Technical Center** in Las Vegas, Nevada, learn the technical and personal skills needed in an actual office environment. The course includes word processing, electronic spreadsheets, database management, desktop publishing, and modern office responsibilities. Students receive a "contract" grade, a module grade, and a management grade. They also make an 8- to 10-minute presentation on a business topic, for example, the electronic office. At the beginning of the week, each student writes a "contract" promising to complete a number of course modules in a minimum of 7 1/2 hours during the week. A "contract" grade is based on whether a student fulfills what he/she agrees to do. "Contracts help me achieve my goals and give me the feeling that I can do anything I desire if I make the effort," one student said. "Contracts motivate me to work faster and harder," another student said. A module grade is based on satisfactory completion of the contracted work; students must redo unsatisfactory modules before a grade is given and credit is issued. For a management grade, students earn points based on desirable workplace practices, such as regular attendance, promptness, and proper dress. Major points are deducted for being away from the work station unnecessarily or failing to log out of the computer network.

When students pass a test on certain modules, they earn certificates saying that they have achieved a new performance level. "The certificates make me feel better about myself," one student said. Students appreciate being allowed to make decisions about their work, take responsibility for their efforts, and earn recognition for their accomplishments.

Contact: Lynda R. Spann, Business Department
Southern Nevada Vocational-Technical Center
5710 Mountain Vista
Las Vegas, NV 89120
Phone: 702/799-7500

"Active Learning" Helps Students Develop Critical Thinking Skills

Teachers use a variety of "active learning" techniques to help students develop critical thinking skills for effective written and spoken communication. These techniques allow students to talk and write about what they are learning while relating it to past experience and applying it to daily life. Active learning methods include: encouraging students to develop their own questions about the subject matter; promoting open discussion in groups of three to five students; and asking for a summary of what has been covered.

Teachers can give groups of students "the facts" and ask them to arrive at a "verdict" as if they were sitting on a jury in a courtroom. A professor at **Morehead State University** in

Kentucky has assembled descriptions of 20 ways to enliven a traditional classroom lecture through "active learning."

Contact: Sue Y. Luckey, Department of Information Sciences
College of Business
Morehead State University
Morehead, KY 40351-1689
Phone: 606/783-2741

English Teacher Uses Persuasive Writing Lesson to Improve Career-Bound Students' Communication Skills

At **Leonardtown High School** in Maryland, Patrick Henry's *Give me liberty, or give me death* speech is the basis of a persuasive writing lesson aimed at improving the communication skills of career-bound students. The assignment includes studying historical background and vocabulary before reading the speech, discussing the effectiveness of the speech and describing reactions to it, and reading or listening to other famous orations. Students use a personal computer to compose a "persuasive" work-related essay that helps them make the connection between strong communication skills and success in the workplace. The teacher emphasizes clear, concise writing; oral communication skills; and involving all students in the instruction. Students develop critical workplace skills, such as problem solving, decision making, reading, writing, and listening.

Contact: Mary Szczyglowski, Chairperson
English Department
Leonardtown High School
Leonardtown, MD 20650
Phone: 301/475-5007

Student-Centered Activities Improve Students' Understanding of Literature

An English teacher at **Summerville High School** in South Carolina uses a variety of hands-on activities to make the book, *Lord of the Flies,* relevant to today. The students use problem solving strategies to answer questions about the book. In one activity, students write a business letter to the young men who are the main characters, explaining how the modern "team management" concept could have improved their situation. The teacher also assigns a "survival simulation" activity in which students meet in groups for four days to decide how to help the main characters. Each group—the leaders, the hunters, the shelterers, the rescuers, and the law/order keepers—prepares an oral and written report to present to the class. Because the teacher expects more from students and focuses on what they need to know for the "real world," student participation has doubled. This includes a number of students who "didn't bother" to turn in written assignments in the past. Students complete their assignments because the activities are student-centered rather than teacher-centered.

Because students are actively involved in the literature lessons, they are more apt to remember and use what they study.

Contact: Kelly Jackson, English Teacher
Summerville High School
1101 Boone Hill Road
Summerville, SC 29483
Phone: 803/873-6460

Involving Students and Parents in Planning and Achieving an Accelerated and Coherent Program of Study

Adviser/Advisee Program Helps Students Develop a Career Plan

An adviser/advisee program at **Trigg County High School** in Kentucky helps students develop a career plan and work toward achieving higher standards. Each academic and vocational teacher is randomly assigned 16 students—four from each grade level. Teacher advisers meet with students in 45-minute group sessions in September, November, January, and March. They discuss career and postsecondary options, college/vocational school costs, and the student's four-year high school program of study. The advisers distribute information to help students make wise decisions about the future. Advisers file materials on each student in career portfolios kept in the guidance office. During April, ninth and tenth grade students and their parents attend a counseling session at the school one night, followed by junior and senior students and their parents the next night. Last spring, 94 percent of students attended; over 70 percent brought one or more parents.

The school wages a year-round campaign to remind parents that it is *time to be part of your child's future.* Parents learn about the career advisement program at parent-teacher conferences in the fall, in phone calls and letters from teachers during the year, in newspaper articles, in advertisements sponsored by the local education association, and in radio public service announcements. As a result of the program, students and parents are more involved in planning for high school and beyond. At last count, 98 percent of students had a planned program of study for tech prep or college prep.

Contact: Brenda Southwick, Home Economics Teacher
Trigg County High School
203 East Main Street
Cadiz, KY 42211
Phone: 502/522-2215

Students Work with Partners To Explore a Career

Twenty English students and 13 business law students at **Weldon High School** in Weldon, North Carolina, worked with partners to conduct in-depth research on a career in business/retail, technical/trade, health, or a profession such as education. The teams used the library to find background information, educational qualifications, and salaries for their chosen careers. They wrote job descriptions and designed newspaper ads, radio announcements, and a pamphlet to promote the career. Each team presented its findings in class and answered questions from the other students. In this integrated academic and

vocational activity—titled *Finding a Career Today*—students learned that it is never too soon to think about the future and what it takes to find and keep a job in a career field. They also learned the value of thinking creatively, solving problems, and working in teams to accomplish a task.

Contact: Matilda Thornton, Vocational Teacher
Weldon High School
P.O. Box 71
Weldon, NC 27890
Phone: 919/536-4828

Technical Center Uses TV and Computers To Help Students Develop Four-Year Plans

In West Virginia, all eighth grade students must have a four-year plan for grades 9-12. **United Technical Center** in Clarksburg, West Virginia, has developed a comprehensive system for involving teachers and parents in helping students create a plan. The steps include:

- All seventh grade students complete a learning styles inventory, an interest assessment, and an aptitude test. The tests are given to all students at the same time via Channel One television. Classroom teachers are trained to monitor the tests.
- A "customized" computer program produces a "preliminary" four-year plan for each student. The computer considers graduation requirements, academic and vocational course offerings, student scores on a comprehensive basic skills test, and interest inventory results.
- The test results and the four-year plans are provided to counselors at the students' home schools. They give them to teacher advisers, who have been trained to assist with the planning process.
- The advisers study the information and explain the results to students and their parents in a meeting at the school. Students leave the meeting with a four-year plan that is acceptable to them, their parents, and the school.

Contact: Joan Smith, Director
United Technical Center
Rte. 3, Box 43C
Clarksburg, WV 26301
Phone: 304/624-3284

Parent Involvement Helps Guide Students into Meaningful High School Program of Study

The counselor at **Franklinton High School** in Franklinton, Louisiana, worked with her counterpart at Franklinton Junior High School to alert parents to the importance of a challenging four-year program of study for their soon-to-be high school students. It was the first time parents at these schools had been involved in a meeting to discuss their children's course plan.

The counselors met in early January to plan activities, choose an interest inventory test, and set dates for parent involvement meetings at each school. A letter to parents in late January explained upcoming guidance activities and announced the meeting dates. The counselors also met with eighth grade students to explain the process for selecting a program of study. In February, students took, scored, and interpreted the results of a general interest inventory test. Counselors explained the correlation between scores and interests and gave students a computer printout of the results.

A parent meeting at the junior high school took place in mid-February. The parents heard presentations on tech prep, high school career paths, and a four-year program of study. They reviewed available high school courses and discussed the interest inventory results. Two weeks later, the eighth grade students and their parents met with counselors at the high school to fill out survey sheets of courses for the coming year. The principal explained the high school program; an applied math teacher discussed the math program; and 12th grade students described the curriculum and the value of early career choices and careful selection of courses. Parents were encouraged to make an appointment with a counselor to help their children choose elective courses. Parents who were unable to attend the meeting received the course materials and a note inviting them to contact a counselor for more information.

In mid-March, the high school counselor went to the junior high school to discuss students' choices and to help them make any necessary changes. Parents of eighth-graders were invited to upperclassmen parent night at the high school in mid-April to meet the teachers and learn how high school students complete the planning/selecting/scheduling process. They also learned more about tech prep, career paths, and programs of study.

Parent involvement in planning and conducting an eighth grade career day at the junior high school in early May took on a new dimension: Parents obtained free materials to distribute to the students, secured prizes that were awarded during the event, and participated by explaining their jobs and careers.

Incoming ninth grade students were able to discuss needed changes when they picked up their schedules in mid-summer. The ninth grade students will take another interest inventory test in the first semester of 1993-94; results will be correlated with findings from the eighth grade test. The students will also complete an aptitude test and finalize their four-year plans. Ninth grade English classes will be used to reach all students with this activity.

The awareness program has given students more direction for their lives and has provided parents with valuable information on what their children are expected to achieve.

Contact: Kaye Spencer, Counselor
Franklinton High School
1 Demon Circle
Franklinton, LA 70438
Phone: 504/839-6781

Business Partner Helps Produce TV Announcement on Ending the General Track

Cable and commercial TV viewers in Evansville, Indiana, sat up and took notice when a public service announcement showed three handsome young people in an unemployment

line. The announcement made it clear that the young people, who thought they "had it made" because of their "looks" or athletic ability, had graduated from high school with a "general track" diploma that left them unprepared for work or further education. **Reitz High School** students wrote the script, and the school's business partner produced the announcement and placed it on TV. The announcement contributed to a schoolwide "push" to drop low-level math, science, and English courses and to enroll students in either tech prep or college prep. Fewer than 10 percent of students remain in the general track as a result of the effort. More career-bound students—including seniors—are taking high-level math and science. Meanwhile, the school dropout rate continues to decrease, and the percent of students failing one or more courses declined at all levels except ninth grade. These encouraging results are convincing teachers that career-bound students can achieve more if they are given challenging tasks and extra help.

Contact: Christine Settle, Principal
R. J. Reitz High School
Forest Hills
Evansville, IN 47712
Phone: 812/423-5874

Academic and Vocational Teachers Working Together to Improve Student Learning

Alabama School Involves Private Sector in Building Teamwork Among Teachers

The Economic Development Partnership of Alabama has contributed to teamwork and cooperation among academic and vocational teachers at **Central High School** in Phenix City, Alabama. The project began in 1992 when a *High Schools That Work* technical assistance team noted the need for more collaboration—teacher to teacher, classroom to classroom, and department to department—to benefit career-bound students. The education director of the Partnership—a member of the technical assistance team—offered to coordinate a workshop on team building for Central High staff. Thirty-five teachers and administrators participated in the workshop, which was presented in August 1992. During the four-day in-service event, industry personnel trainers from Alabama Power Company conducted activities focusing on a "vision" of teamwork and communication. The teachers "pledged" to adopt new behaviors, including visiting each other's classrooms, holding interdepartmental meetings, increasing understanding of other teachers' responsibilities, creating joint projects, and celebrating success together. Teachers made a commitment to look for ways to emphasize that the school is "one school"—not Central High School and "the Vocational School."

In the spring, the Partnership team returned to the school to conduct a session on cooperation and teamwork for a group of students, parents, and educators. The group participated in an activity that demonstrated workplace productivity under a traditional, autocratic system and under a system in which the workers set goals and decide how to organize their work to accomplish the goals. The activity showed that workers who are trained and involved are more productive and turn out better products. The underlying message of the activity was that schools can benefit from the teamwork of students, parents, community leaders, and educators. The Alabama Economic Development Partnership provided the

program as a public service. Central High School was the first high school in Alabama to participate in the program.

These activities have generated a positive atmosphere at Central High School—one in which career-bound students see many examples of teachers engaging in the type of teamwork that business and industry leaders expect of their employees. Also, teachers working together can more effectively prepare students by teaching across the curriculum rather than remaining isolated in their specific teaching areas.

Contact: William G. Hayes, Principal
Central High School
2400 Dobbs Drive
Phenix City, AL 36876
Phone: 205/298-3626

Health Careers Teacher and English Teacher Cooperate in Staff Development for Faculty at Other Schools

A Health Assistant II teacher and an English teacher at **United Technical Center** in Clarksburg, West Virginia, worked together to teach a course for teachers titled "Developing Partnerships in Vocational and English Communications." The course was offered in a Regional Education Service Area (RESA) in cooperation with the West Virginia Department of Education. Twenty-five teachers learned how to form partnerships to develop and present lessons in speaking, listening, viewing, reading, and writing. The participants learned new teaching strategies, ways to use the techniques with students, and cooperative lesson planning. They submitted lab sheets that described each new activity, evaluated effectiveness in the classroom, and provided suggestions for improvement. One outcome of the course is that teams of teachers are continuing to work together.

Contact: Joan Smith, Director
United Technical Center
Rte. 3, Box 43-C
Clarksburg, WV 26301
Phone: 304/624-3284

Seven Steps to Integrating Academic and Vocational Education

Hoke County Schools in Raeford, North Carolina, devised the following seven-step process for integrating academic and vocational instruction.

1. Conduct orientation, and create awareness;
2. Gain support from administration (superintendent and principal);
3. Identify a core group of teachers willing to "buy in";
4. Identify similarities in curriculum, teachers, teaching strategies, and students;
5. Outline the implementation plan: activities, combining the curriculum, sharing students;

6. Restructure the master schedule;

7. Rediscover/reinvest.

The 92-member staff is organized into eight teams led by teachers who have attended *High Schools That Work* staff development conferences. Each teacher receives a record of integration efforts, including the names of teachers working together, dates involved, number of students, and competencies covered. Combinations include technical math and marketing; calculus and horticulture; biology, horticulture, and communications; and science, electronics, and automotive technology. Teachers are discarding "antiquated" teaching methods and "turf guarding" in favor of team teaching and challenging cooperative learning projects based on curriculum alignment. Examples of integrated efforts include:

- In a combined technical math and Horticulture I project, students designed a mist system for the high school greenhouse. They sketched a design and calculated the amount of pipe needed for the system.
- After a technical math teacher made algebra formulas "user friendly" for a class of Health Occupations II students, all of the students scored 100 on a competency test on using math principles to convert temperature. Students said the informal teaching session strengthened the problem-solving skills taught in algebra and chemistry. Teachers emphasize applied instruction in academic classes and use math, science, and communication in vocational classes.

Staff involvement in integrated instruction has increased from 35 percent to 85 percent since the 1991-92 school year.

Contact: Jeff Moss, Vocational Director
Hoke County Schools
P.O. Box 370
Raeford, NC 28376
Phone: 919/875-4106

Using Closed Circuit Television to Merge Academics and Application

An industrial technology instructor and an art teacher at **Seneca High School** in Seneca, South Carolina, combined their capabilities and the developing skills and talents of their students in a communications course to produce live and videotaped telecasts to all classes within the school. The students operate the closed circuit TV equipment and appear "on camera" in interviews, news reports, feature stories, and sports coverage at school and in the community. The video communications course helps students learn new skills and work cooperatively over a long period of time to produce a significant product. All students have an opportunity to increase their ties to the "school community" through active participation in debates, editorials, and other programming, and by keeping up with what is going on at school. The system is capable of producing programming on successful school practices to be shared with other schools in the county and with other counties and states.

Contact: Al Langston, Industrial Technology Teacher
Fred Edgerton, Art Teacher
Seneca High School
P.O. Box 917
Seneca, SC 29679
Phone: 803/885-5000

Writing a Research Paper in a Non-English Class: Technical Vocational Center Develops Guidelines

Students in Legal and Medical Office Procedures classes at **Norfolk Technical Vocational Center** in Norfolk, Virginia, learned to write research papers that meet the standards of high school academic and vocational courses and the qualifications of any formal writing assignment in postsecondary education. Students participating in the project were sophomores, juniors, and seniors from five "home" high schools in Norfolk. Topics were selected from textbooks and current events on law and medicine. The students received instructions from the vocational teacher and the academic teacher and were allowed class time to gather background information on their topic, make revisions and editorial changes, and type the final copy. Papers were assigned in March and were due in May; one month was earmarked for research. The English teacher checked the papers for form and grammar, and the vocational instructor at NTVC graded the content, related subject area, typing format, and an oral presentation of the report. The academic teacher and the vocational teacher who worked together on the project developed guidelines for research and report writing, including a checklist for the student, a format for the paper and revision checklist for the student, and an evaluation sheet for the teacher. The research/report guidelines—which can be used by any non-English teacher to assign, critique, and evaluate research papers—were distributed to all instructors at NTVC for use in their classrooms. (Copies of the guidelines are available from the vocational teacher listed below.) The two teachers believe that the best time to assign this project is in the first semester, to avoid conflict with English class papers that are due in the spring.

Contact: Julia T. Avery, Business and Marketing Chairman
and Legal/Medical Office Procedures Instructor
Norfolk Technical Vocational Center
1330 North Military Highway
Norfolk, VA 23502
Phone: 804/441-5625

Team of Teachers Uses Mini-Grant to Develop Senior Magazine Project

The **New Castle County** site in Wilmington, Delaware—consisting of three vocational-technical schools—provided its academic and vocational teachers with mini-grants to create innovative integrated learning projects that could be replicated by other teachers. The teachers worked in teams to design projects to improve the math, science, and communication skills of career-bound students.

The mini-grant at **Delcastle Technical High School** was for a Senior Magazine Project, a coordinated effort between the vocational and English departments. Students work in groups of four to produce a career-related trade or technical magazine. The publication

contains a variety of articles: interviews, how-to's, book reviews, new product news, developments in the career field, and accounts of opportunities for career advancement and further education. The students choose a title, design the cover, prepare a bibliography and a table of contents, and produce an editor's page detailing each student's contributions to the magazine. An English teacher and a vocational teacher evaluate the magazine on writing proficiency and technical accuracy. Students gain a better understanding of the dynamics of teamwork and the need to communicate clearly with individuals in and out of their career fields in successfully completing a task. One student said he discovered that "Being able to write about my trade is just as important as actually performing the trade."

Contact: Victoria Gehrt, Director of Instructional Services
New Castle County Vocational-Technical School District
1417 Newport Road
Wilmington, DE 19804
Phone: 302/995-8000

Academic and Vocational Skills Combine in "Project Roller Coaster"

Ninth grade students design, build, and market an amusement park "roller coaster" in an integrated learning project in Introduction to Physics and Chemistry at **Nelson County High School** in Bardstown, Kentucky. Building a model roller coaster requires the students to delve into math, English, drafting, carpentry, welding, electronics, and marketing, in addition to science. Working in teams, the students seek the assistance of vocational students in preparing a computerized blueprint, making a prototype, and building and wiring the final model.

Project Roller Coaster students work with students in upper-level physics and Principles of Technology to analyze the scientific concepts needed for the model and to determine possible improvements. The students work with marketing students to prepare an oral presentation aimed at selling their roller coaster to the public; they also develop television, radio, and newspaper advertising for their "wild ride."

In the final phase, students participate in science day at an amusement park, where they perform calculations and examine scientific concepts using featured attractions at the park. The students are required to document their progress in each phase of the project. Portfolios, explanations of scientific and technical processes, results of experiments, advertisements and justifications for marketing techniques, and a workbook on the amusement park visit are among the many written documents on which the students are evaluated.

Project Roller Coaster teaches students to solve problems, communicate, work in teams with classmates and vocational students, and recognize the connection between industry and education. What's more, students have a tangible product to show for their effort.

Contact: Angela Bernardi, Science Teacher
Nelson County High School
1070 Bloomfield Road
Bardstown, KY 40004
Phone: 502/349-7010

Integrating Foreign Language and Social Studies into International Marketing Education

Students in International Marketing at **York High School** in Yorktown, Virginia, worked in small groups on a year-long project to explore the cultural and economic conditions of a country where French, German, or Spanish is spoken. Each group developed a 20-page report analyzing the conditions of the country and relating them to the benefits and risks of doing business there. The groups also made 15-minute oral presentations to "persuade" other students that their countries are good places to conduct business. Finally, each group decided on new products and services that would be popular in their countries. To "sell" the products and services, the students prepared a print advertisement in the country's native language and videotaped a TV commercial in English. The marketing teacher worked with the foreign language and government teachers so that students could receive credit in those classes for the work they did on the project.

Contact: Elena Henning, Marketing Instructor
York High School
9300 George Washington Memorial Highway
Yorktown, VA 23690
Phone: 804/898-0354

Cooperative Learning in Occupational Training

Academic teachers from **Reading High School** and **Muhlenberg High School** in Pennsylvania became "students" as they attended a series of classes at **Reading-Muhlenberg Area Vocational-Technical School.** The activity oriented teachers to the vo-tech program, taught them new skills, demonstrated the overlap between academic and vocational courses, provided fresh insight into the needs of career-bound students, and heightened their appreciation for the knowledge and skills of vo-tech teachers. Four classes were chosen on the basis of student enrollment and the academic teachers' interest in new technology; they included auto technology, health occupations, electrical technology, and computerized manufacturing. While playing the role of students, the teachers experienced the need for math, science, and communications skills in performing career-related tasks. For example, they made aluminum name plates that would not turn out right unless they fed the correct computations into a computer that told a machine what to do.

The classes were a prelude to a cooperative effort by academic and vocational teachers to design a program of study incorporating applied learning into academic courses. The vocational school experience gave academic and vocational teachers a chance to interact before beginning the curriculum revision and relieved the anxieties of academic teachers over their lack of knowledge of what career-bound students need to know.

Contact: Gerard Cunningham, Administrative Director
Reading-Muhlenberg Area Vocational-Technical School
P.O. Box 13068
Reading, PA 19612-3068
Phone: 215/921-7300

Using Information to Change School and Instructional Practices

High School "Keeps Score" in Helping Career-Bound Students Succeed

Chopticon High School in Morganza, Maryland, is "keeping score" on students: the courses they take, the programs of study they are completing, their scores on state standardized tests and the SAT, daily attendance, and whether they stay in school. Compiling and analyzing data—and making changes based on the information—is an integral part of the school's commitment to success for all students through the *High Schools That Work* program. The approach is paying off in higher achievement: Maryland Functional Test Scores in reading, math, and writing in 1992-93 were the highest in school history; the number of students completing either occupational program requirements or university system requirements rose from 36 percent to 61.4 percent between 1991 and 1993; the number of students enrolled in high-level English, math, and science courses—particularly math—has grown significantly since 1989; average daily attendance is up; and the dropout rate is down. Other measures include the number of students with high grade point averages, the number with perfect attendance, and the number who earned recognition from the St. Mary's County Business, Education and Community Alliance. The information base is useful to students, teachers, and counselors.

Contact: **John R. Ryan, Principal**
Chopticon High School
Rte. 242
Morganza, MD 20634
Phone: 301/475-5655

School System Research Supports Equivalence of Applied Math

Cobb County Public Schools in Marietta, Georgia, conducted research to determine how students in Applied Algebra (CORD Applied Math) compare to students in Algebra I. A committee designed a test that was administered to 583 students completing Applied Algebra, Algebra I, and Elementary Algebra at four county high schools. The three categories of test items included: 1) core topics that students are expected to learn in all algebra courses; 2) topics taught in Algebra I but not in Applied Algebra; and 3) topics taught in Applied Algebra but not in Algebra I. The test results showed that Applied Algebra students scored as well as Algebra I students on the core items and better than the Algebra I and Elementary Algebra students on the Applied Algebra subtest. There was no difference in the overall scores of Applied Algebra and Algebra I students.

In analyzing the test data, the Cobb committee identified misconceptions and/or weaknesses of Applied Algebra students: simplifying radicals, manipulating parametric equations, simplifying algebraic expressions, and working with exponents. The committee recommended that Applied Algebra teachers supplement the course to overcome the weaknesses.

Applied Algebra students were found to be strong in applications, such as using calculators and solving "real world" problems. To help math teachers infuse applied material into traditional Algebra I content, a team of teachers correlated applied math labs and problems with the Algebra I textbook and gave all Algebra I teachers a guide containing the correlations.

The school system is continuing to study various approaches to teaching math and is seeking ways to improve the math skills of all students. The test will be administered as a post-test to students in Algebra I, Elementary Algebra II, Applied Algebra, and eighth grade Algebra I during the 1993-94 school year. The committee will meet in June 1994 to analyze the results and complete an item analysis. The committee will track Applied Algebra students who took the test to see if they are taking additional math courses, which courses they are taking, and if they are having success in the courses.

Contact: Charlotte Rice, High School Math Supervisor
Cobb County Public Schools
514 Glover St.
Marietta, GA 30060
Phone: 404/426-3442

Organizing the School to Support Integration of Academic and Vocational Studies

Using Big Blocks of Time in the School Day to Promote Applied Learning and Integrated Studies

To give teachers more planning time and students more time for hands-on learning activities, **Sussex Technical High School** in Georgetown, Delaware, discarded the traditional 50-minute class schedule in favor of a new "odd/even" schedule with large blocks of time. The new format allows all classes to be "labs" in which all students are "workers." Period 1 meets for one hour daily; periods 2, 4, and 6 meet for extended time on "even" days—Monday, Wednesday, and Friday; and periods 3, 5, and 7 meet for extended time on "odd" days—Tuesday and Thursday. Teachers have 45 minutes a day for individual planning and 30 minutes a day for collaborative planning with other teachers. School leaders are looking at ways to extend the time for Period 1.

The staff supports the schedule wholeheartedly. Teachers appreciate having more time for innovative instructional methods, such as hands-on learning activities, long-term projects, and integrated lessons. Students and teachers report that they have more time to delve into subjects and to get to know each other better. Administratively, the schedule has many advantages: Since students do not change classes every 50 minutes, there is more time for instruction, less confusion in the hallways, and fewer discipline problems. Science labs and physical education classes—often difficult to schedule—are easy to arrange under the new plan.

Contact: Carol C. Schreffler, Director of Instruction
Sussex County Vocational-Technical School District
P.O. Box 351, Rte. 9
Georgetown, DE 19947
Phone: 302/856-2541

Ninth and Tenth Grade Students Work in Teams in Project SAGE

To make courses more relevant through interdisciplinary teaching and learning, **York High School** in Yorktown, Virginia, introduced a project known as SAGE—Science, Algebra, Geography, and English. The goal is to guide students toward "wisdom through experience and reflection." The ninth and tenth grades are "teams" in which students study the traditional courses as well as thematic units connecting all disciplines and addressing the knowledge and skills required by the state. Teachers remain with the students for two years, offering help as needed during the summer to accelerate learning. No students fail. Beginning in 1993-94, one teacher assistant was added for every four teachers. In addition, teachers from other departments—foreign language, special education, vocational, fine arts, physical education, and guidance—are enlisted as "consultants" to give the SAGE teachers input from specialty areas. By teaming an entire grade—rather than block scheduling or teaming a portion of a grade—teachers are able to control the schedule on a period-by-period, day-by-day basis.

Contact: Barry L. Beers, Principal
York High School
9300 George Washington Memorial Highway
Yorktown, VA 23692
Phone: 804/898-0354

Maryland Develops Statewide Integrated Learning Strategy

In March 1992, the **Maryland State Department of Education** organized an Integrated Learning Team of interdepartmental specialists to develop a statewide approach to instruction that could be incorporated into all schools in the state. The team prepared a vision statement, plotted strategic directions, analyzed barriers, and issued a series of recommendations and actions for merging academic and vocational education over the next five years. The target audiences of the report are State Department professional staff, local education department personnel, and other interested parties. The team recommended that all students have access to a rigorous program of study that prepares them to be workers, parents, citizens, and lifelong learners.

The high school level was chosen as the "critical starting point" for the statewide effort because high schools have a strong "subject area" orientation, tend to isolate occupational and academic learning, and lack an adequate focus for career-bound youth. As a member of the Southern Regional Education Board-State Vocational Education Consortium, Maryland has 18 sites working to achieve the goals and key practices of SREB's *High Schools That Work* program. The Integrated Learning Team emphasizes that, to be effective, the plan must be a collaborative effort among state and local stakeholders who are moving toward a common vision.

Contact: Katharine Oliver, Assistant State Superintendent
Career Technology and Adult Learning
Maryland Department of Education
200 W. Baltimore St.
Baltimore, MD 21201
Phone: 410/333-2075

Designing a Challenging and Focused Sequence of Academic and Occupational Studies

New "Tech Prep" Program of Study Contains Four Career Clusters

A rigorous, focused program of study combined with some "cold, hard facts" about potential earnings is inspiring career-bound students in **Norfolk Public Schools** in Norfolk, Virginia, to make an extra effort to prepare for the future. The program is organized by career clusters: Business and Marketing, Engineering and Technical, Health and Human Services, and Fine Arts. Recommended courses include algebra and geometry, three years of lab science, English courses to help students improve their communication skills, and demanding vocational courses. Students can take vocational electives as well as courses such as art, foreign language, and music.

An attractive, well-designed brochure with the slogan "Believe, Achieve, Succeed!" contains recommended courses for grades 9-12 in each career cluster. The brochure reminds students that a foreign language may be required for enrollment in some college programs and recommends that all students take one semester each of keyboarding applications and introduction to computer applications. Students may receive credit at area postsecondary institutions.

The committee that developed the program of study consisted of a high school principal, middle and high school counselors and teachers, and representatives of the Department of Adult and Vocational Education, the Department of Instruction, Tidewater Community College, and business and industry. Prior to designing the program, the committee decided to:

- Use the cluster approach—rather than single occupations;
- Require additional math and science;
- Examine vocational courses for rigor and relevance;
- Implement the program in all high schools simultaneously;
- Ensure that postsecondary education options include apprenticeship, community college, university, and technical training.

Program development—which took almost a year—included meetings and consultation with staff members, two meetings for program review, final revision and refinement, and printing. During the following year, "stakeholders" were oriented to the new program of study. They included school board members, middle and high school administrators and faculty, guidance counselors, eighth and ninth grade students, parents, and civic groups. Norfolk Public Schools and Tidewater Community College oriented academic and vocational teachers, administrators, school board members, counselors, vocational advisory council, and business/industry leaders to the new program at a summer institute before implementation.

In promoting the program, the school system distributed a flyer urging students to "Make a Half-Million Dollar Decision About Your Future." The flyer contrasts the increased earnings of a student who makes an "informed decision" about tech prep with students who

make a "quick decision" about a general high school diploma or "no decision" about dropping out of high school. It asks the questions: "How will you spend the working half of your life?" And, "What will your choice be?"

Contact: Jane Hosay, Tech Prep Specialist
Norfolk Public Schools
800 City Hall Ave.
Norfolk, VA 23510
Phone: 804/441-2957

Tennessee Eliminates the General Education Track; Students Will Choose Between Tech Prep and College Prep

The **Tennessee State Board of Education** has adopted a restructuring plan that will require high school students planning to graduate in 1999 to choose from two programs of study: tech prep or college prep. The two-path system was mandated by the General Assembly as part of the *Schools for the 21st Century* program. High schools will have until 1995 to prepare for the new design. Requirements for the tech prep program include three math courses, three science courses, four English courses, and four courses in a broad vocational or technical field of study. Vocational courses in Tennessee will contain more content in math, science, and communication; new vocational courses will be created to reflect the skills that workers need in modern business and industry. Most high schools will offer Principles of Technology (applied physics) and Math for Technology (applied math)—academic courses that contain essential college prep content but are taught through hands-on instructional methods. Academic teachers will become more like "coaches" who guide students through a process of problem solving and discovery.

Contact: Marvin Flatt, Assistant Commissioner
Division of Vocational-Technical Education
Tennessee Department of Education
710 James Robertson Parkway
Nashville, TN 37243-0383
Phone: 615/532-2815

Award-Winning Tech Prep Program Links Community College with Eight High Schools

The **Quad-County Tech Prep Consortium** in Florida is a successful alliance between **Indian River Community College** and **school systems in Indian River, Martin, Okeechobee, and St. Lucie counties** in raising the achievement of career-bound students. The consortium has involved key personnel in decision making, developed focused programs of study linking high school and postsecondary education, and implemented an applied curriculum. Consortium leaders initiated a joint staff development program for personnel from all participating schools and utilized marketing and public relations strategies to communicate with students, parents, and the community. Staff development for teachers and guidance counselors from the college and the eight participating high schools has been an integral part of the initiative from the beginning. For example, in workshops in June and July 1993, training was provided in reading for learning in the content area, critical thinking, Applied Algebra, Principles of Technology, use of a graphing calculator in

algebra courses, and Applied Biology/Chemistry. Consortium leaders say the initial challenge was to get teachers, students, and parents to recognize the need for change in what and how career-bound students are taught and to move ahead with the cooperative effort. Leaders used data from the *High Schools That Work* program to demonstrate the success of high schools that make fundamental changes in the way they prepare the "other" students. The Quad-County program received the only "Excellence in Tech Prep Award" presented by the U.S. Department of Education in 1993. The program also received a "1993 Tech Prep Award" from the American Association of Community Colleges.

Contact: Paul O'Brien, Tech Prep Coordinator
Indian River Community College
3209 Virginia Ave.
Fort Pierce, FL 34981-9003
Phone: 407/462-4700, Ext. 4886

Patty Winterburn, Vocational Coordinator
Martin County School District
10205 SW Pratt Whitney Road
Stuart, FL 34997
Phone: 407/287-9810, Ext. 326

Providing Students with Extra Help to Meet Higher Standards

Helping At-Risk Students Make the School-to-Work Transition Through Employability Skills and Additional Support

Business, education, and government combined forces in Louisville, Kentucky, to create **The Louisville Education and Employment Partnership** to help at-risk students prepare for employment and postsecondary education. The approximately 1,500 economically and educationally disadvantaged students in the program are selected from the 22 high schools in the Jefferson County school system. Students and their parents sign an agreement that the students will attend school at least 95 percent of the time, improve their grades, participate in the program options, and stay in school until they graduate.

The program offers a four-year curriculum in pre-employment work/maturity skills in 11 core competencies. Students have access to academic tutoring and a computerized math and English skills system. Other activities include a mentoring program with role models from the business community, an after-school work experience for juniors and seniors, and summer school or summer employment opportunities. In the mentoring activity, over 200 adults from business and government introduce students to the corporate environment and alert them to needed school-to-work transition skills.

Each school has a Career Planner, who becomes a "significant other" to students in the program. Career Planners provide career guidance, motivational support, and connections with the business community. Students once in danger of dropping out are staying in school until graduation and are learning the skills they need for employment or postsecondary education. Students report that they feel prepared and confident to find and keep jobs.

The Louisville initiative was selected as the *1990 Business Education Partnership Program of the Year* by the National Alliance of Business. In 1992, the Partnership was one of nine sites that received a three-year cooperative demonstration grant from the U.S. Department of Education.

Contact: Angelo Vaccaro, Executive Director
Louisville Education and Employment Partnership
305 W. Broadway, Suite 506
Louisville, KY 40202
Phone: 502/581-9155

Send Us a Description of Your Outstanding Practices

Outstanding Practices is an annual publication of effective strategies to aid *High Schools That Work* sites and other high schools to improve the academic and occupational achievement of career-bound students. The report focuses on practices in the classroom and at the administrative level.

SREB invites academic and vocational teachers, counselors, and administrators to submit descriptions of their successful practices for getting career-bound high school students to make a greater effort to master complex academic and vocational/technical content. You may use an Outstanding Practices form available from SREB, or you may send a written narrative that includes:

- Your strategy;
- Four or five activities for implementing the strategy;
- Four or five benefits or results of the effort. Include any empirical data that suggest that the strategy is effective. Also include anecdotal information that suggests that students and teachers benefit from the strategy.
- Name, address, and phone number of a contact person who can provide additional information.

Send outstanding practices to: Gene Bottoms, Director, SREB *High Schools That Work* Program, 592 Tenth St., NW, Atlanta, GA 30318-5790.

The *High Schools That Work* program is the nation's largest and fastest growing effort to raise the achievement of career-bound students. Created by the Southern Regional Education Board-State Vocational Education Consortium, the program includes over 300 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.

SOUTHERN REGIONAL EDUCATION BOARD
592 Tenth Street, N.W.
Atlanta, GA 30318-5790

U. S. POSTAGE
PAID
ATLANTA, GEORGIA
PERMIT No. 404
NON-PROFIT ORG.

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

NOTICE

REPRODUCTION BASIS

☑ This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

☐ This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").