

# Dr. Gene Bottoms

Senior Vice President  
Southern Regional Education Board



Nominated by:  
**Dr. Douglas Major, CEO**

Meridian Technology Center  
Stillwater, OK 74074  
doug@meridiantech.edu  
405-377-3333 Ext. 220

# Oklahoma State Senate

JIM HALLIGAN  
District 21

(405) 521-5572  
E-mail: halligan@oksenate.gov



Chairman:  
Appropriations Subcommittee  
on Education

July 17, 2015

2016 Brock Prize Jurors  
2021 S. Lewis, Suite 415  
Tulsa, OK 74104-5733

Dear Jurors:

It is an honor on my part to recommend Dr. James E. (Gene) Bottoms for the 2016 Brock Prize in Education. I have been associated with Dr. Bottoms for several years through his position as Senior Vice President of the Southern Regional Education Board and have found him to be a person of outstanding character, amazing intellect and enduring commitment to the common good.

Dr. Bottoms is a nationally respected leader in Career Tech Education having published over 200 articles and presented testimony before United States Congressional Committees on numerous occasions. In addition, he is a steadfast advocate for raising high school achievement and getting students ready for college and postsecondary success particularly through career technical education.

I recommend Dr. Gene Bottoms for this honor without reservation and request that you give this request your careful consideration.

Best regards,

A handwritten signature in black ink that reads "Jim Halligan". The signature is written in a cursive style.

Senator James Halligan  
Oklahoma State Senate  
District 21



James E. (Gene) Bottoms, Senior Vice President of the Southern Regional Education Board, is the founder of *High Schools That Work*, the nation's largest and most successful high school improvement network. He has provided leadership as the network has grown from its founding in 1987 as the SREB-State Vocational Education Consortium with 28 high schools in 13 Southern states to today when it serves more than 1,000 high schools in 32 states. He also founded *Making Middle Grades Work* that now serves more than 200 middle grades schools. A theme of his career has been to improve educational excellence for students, especially those enrolled in general and vocational studies and those who are at risk, and integrating academic and career/technical education.

He is frequently called on as a consultant to U. S. Congressional committees, the U.S. Department of Education, state legislatures, state departments of education, teacher education programs and school districts for his keen insights regarding policies and practices that will improve education and student achievement.

Bottoms is the author of many publications and research briefs, including *Making High Schools Work*, a widely distributed and cited book outlining a high school reform framework that integrates academic and vocational studies. In addition, he has led the development of more than 100 guides and other types of publication on school improvement and directs a conference and workshop program that serves more than 10,000 educators annually. The networks' assessment program, referenced to the National Assessment of Educational Progress, has resulted in a large database of information about the impact of school and classroom practices on student achievement.

Bottoms has spent his entire career in education as a teacher, principal, counselor, state department of education administrator, and leader of the nation's largest organization for vocational education professionals. As Executive Director of the 50,000 member American Vocational Association from 1977 to 1985, he played a major role in assisting in the development of federal vocational education legislation, establishing, as a national priority, the strengthening of the academic foundation of vocational students.

He was appointed by the Secretary of Education in 1995 to serve on the National Educational Research Policy and Priorities Board, which is charged with forging a national consensus regarding a long-term agenda for educational research, development and dissemination. He also served as a member of the National Commission on the Senior Year.

Bottoms is a recipient of the prestigious Harold W. McGraw, Jr. Prize in Education, presented annually to individuals who have made significant contributions to the advancement of knowledge through education. In 2013, he was inducted into The University of Georgia Alumni Hall of Fame.

## WORK EXPERIENCE

### *Senior Vice President*

Southern Regional Education Board, Atlanta, GA 1997-Present

### *Vice President for School and Work*

Southern Regional Education Board, Atlanta, GA 1996-1997

### *Director of Consortium*

Southern Regional Education Board, Atlanta, GA 1987-1996

### *Visiting Professor*

Georgia State University, Atlanta, GA 1987-1993

### *Educational Consultant, Atlanta, GA*

Consulting clients included: Kentucky Governor's Commission; Southern Association of Colleges and School; The National Research Center, Ohio State University; Center for Occupational Research and Development, Waco, Texas; States of Alabama, Florida, Louisiana, Massachusetts, New Hampshire, North Carolina, Oklahoma, Virginia, West Virginia; Gwinnett County (GA) Schools. 1985-1987

## ASSOCIATION EXPERIENCE

### *Executive Director*

American Vocational Association, Arlington, Virginia  
Chief Executive of 50,000 member association, budget of \$3 million, staff of 45, and 21 person Board of Directors 1977-1985

## STATE DEPARTMENT OF EDUCATION EXPERIENCE

### *Director of Teacher Education*

Staff and Program Development  
Managed a staff of 60 and a \$4 million research and development budget. 1972-1977

## EDUCATION

Ed.D., University of Georgia, major area of study in Guidance and Counseling. 1965

M.Ed., University of Georgia, major area of study in Guidance and Counseling. 1962

B.S., University of Georgia, major area of study in Education, Social Studies. 1960

## POSITIONS PREVIOUS TO 1972

### *Assistant State Director of Vocational Education*

Managed a staff of 15 and a \$2 million budget. Responsible for new program development, student services, teacher education, staff and curriculum development and program evaluation. 1966-1972

### *State Supervisor of Student Services*

Responsible for development of a system of student services in Georgia's 28 vocational-technical schools. 1964-1966

### *State Guidance Consultant*

Assisted local school districts to improve their guidance programs. 1962-1963

PUBLIC, POSTSECONDARY, AND COLLEGE EXPERIENCE	1957-1970
<i>Teacher, part-time</i>	
Taught a five quarter hour weekend course for the University of Georgia: "Student Personnel Services for Area Vocational-Technical Schools."	
<i>Teacher, part-time</i>	
Taught night classes at Georgia State University: "Educational Psychology" and "Human Growth and Development."	
<i>Teaching Assistant</i>	
College of Education, University of Georgia	1963-1964
 <i>Dean of Student Services</i>	
Responsible for the development of a complete student services program for the South Georgia Vocational-Technical School, Americus, GA.	
	1961-1962
 <i>Public School Teacher and Principal</i>	
Taught the eighth grade and served as principal of Holsenbeck Elementary School, Barrow County, GA (1960-1961), and Friendship Elementary School, Forsyth County, GA (1959-1960) where I led effort that resulted in raising basic skills achievement of eighth-grade students by two grade levels.	
Taught eighth grade classes at Free Home Elementary School, Cherokee County, GA (1957-1958).	
	1957-1961

#### PUBLICATIONS AND WRITINGS

Published over 200 articles and columns and presented written and oral testimonies before committees of the United States Congress on numerous occasions. The following is a list of some of more than 100 publications authored or co-authored for SREB.

Students Can't Wait: High Schools Must Turn Knowledge into Action  
 Rigor, Relevance and Relationships Improve Achievement in Rural High Schools  
 High School Reform Works – When Implemented  
 Making High Schools Work  
 Series on Getting Students Ready for College-Preparatory Courses  
 Essential Competencies for Middle Grades Mathematics Teachers  
 Ten Strategies for Raising Achievement and Improving High School Completion Rates

#### MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

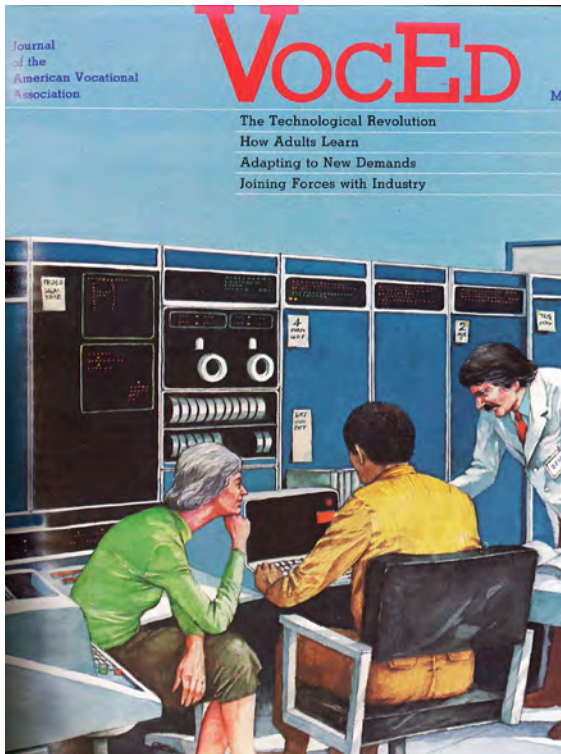
Phi Delta Kappa  
 American Vocational Association (Life Member)  
 Georgia Vocational Association (Life Member) American Education Research Association  
 Association of Supervision and Curriculum Development

# 1977-1987

## The AVA Years

*Executive Director*

American Vocational Association, Arlington, Virginia Chief Executive of 50,000 member association, budget of \$3 million, staff of 45, and 21 person Board of Directors



During this time, many school reformers wanted to place an exclusive emphasis on academic subjects and jettison work-related programs. To a large degree they were successful in many states, and the remaining job-related courses survive because of the battles fought by Gene Bottoms and like-minded people.

As difficult as the fight for survival was, the campaign to convince vocational educators that they had to think differently than in the past was as strenuous. Gene's efforts led to an upgrading of training for vocational educators and to an integration of academic content and vocational training.

At the national level, the Amendments of 1984 were the outcome of these battles. The Vocational Education Act, containing those changes, was then dedicated to the late Congressman Carl Perkins of Kentucky, the long-serving chair of the education committee in the U.S. House of Representatives, and an ardent advocate for vocational education. **During the late 1970s and early 1980s, Gene had worked hand in glove with Chairman Perkins to write the best possible laws for job-related education. In a way, it would have been appropriate to call the 1984 law the Perkins/Bottoms Act.**

## A Tribute to Gene Bottoms from Jack Jennings

Simply put, Gene Bottoms is the most dedicated and hardest-working person I know. No one cares more than he about helping people to gain an education and job-related training.

In the late 1970s and 1980s I worked with Gene when he was the executive director of the American Vocational Association (AVA). Later, I knew him as the director of the *High Schools That Work* program at the Southern Regional Education Board (SREB).

When Gene led the AVA, he was tireless in his efforts to retain work-related courses in high schools and community colleges. He also had to convince many vocational educators that the field had to modernize in order to survive.

Neither of those tasks was easy. Many school reformers wanted to place an exclusive emphasis on academic subjects and jettison work-related programs. To a large degree they were successful in many states, and the remaining job-related courses survive because of the battles fought by Gene and like-minded people.

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When his work ended in Washington in 1987, Gene continued his campaign to improve high school education including a job-related slant. From the 1980s through to the current time, it has been difficult to retain such an orientation. The "standards/testing/accountability" movement has emphasized academics and testing to such a degree that many subjects, particularly vocational training, have been pushed out of the school day.

Gene not only kept the candle burning through his dedication and hard work, he also found ways to survive in a period of "accountability" built on test scores. A wise decision on his part was to ask for and receive permission to participate in the National Assessment of Educational Progress. NAEP became an objective and accepted validator of the High Schools That Work program Gene ran at SREB.

In the world of education, the wheel turns. After decades of fixation on testing and academics, it is now slowly turning back to a re-consideration of job-related training in high schools. Gene Bottoms must not only be commended for his fight to retain that aspect of schooling during many lonely days, he also should be honored for improving the quality of this educational strategy.

Gene Bottoms deserves every credit he receives. I will gladly join the crowd in commending him for a career well-spent.

*Jack Jennings is the founder and former CEO of the Center on Education Policy. Prior to that, he served for twenty-seven years as a subcommittee staff director and then as general counsel for the U.S. House of Representatives Committee on Education and Labor working with Carl Perkins and other committee chairpersons. He has recently authored *Presidents, Congress, and the Public Schools* (Harvard Education Press: March, 2015).*

STATE  DIRECTORS  
National Association of State Directors  
of Career Technical Education Consortium

July 23, 2015

Doug Major  
Meridian Technology Center  
1312 South Sangre Road  
Stillwater, OK. 74074

Dear Doug,

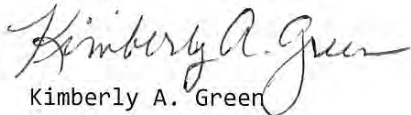
It is with great pleasure that I write in support of your nomination of Dr. Gene Bottoms for the Brock International Prize in Education. I can't think of anyone who is more deserving of this recognition. Dr. Bottoms has dedicated his life's work to the field Career Technical Education (CTE) and because of him, thousands of students across this country have been given opportunities to succeed. Simply stated, our country is better because of his work.

Dr. Bottoms' passion and commitment to ensuring CTE is rigorous and fully aligned to the highest academic and technical standards is unwavering. He has led a movement in this country to revitalize, reform and build the highest of quality experiences for students to ensure post secondary and career success. To say he is a leader is almost an understatement. He is a revolutionary who challenges the status quo. Armed with research and data, his arguments are irrefutable and spotlight changes needed. But he doesn't just feature what is wrong, he builds solutions.

Dr. Bottoms is equated with excellence and ensuring that students of all races, zip codes and income levels have access to high-quality CTE. As a practitioner in the field and the leader of several national organizations, his influence in the research and policy universe is impressive but the impact he has had in transforming practice is undeniably awesome. The reach of his impact is great and enduring.

I can think of no one who has had as profound of an impact on CTE, and the education reform movement, than Dr. Bottoms. He is most deserving of this recognition. Today, tomorrow and well into the future, the fruits of his labor and the depth of his commitment will continue to have a positive impact on students and communities across the country.

Sincerely,

  
Kimberly A. Green  
Executive Director

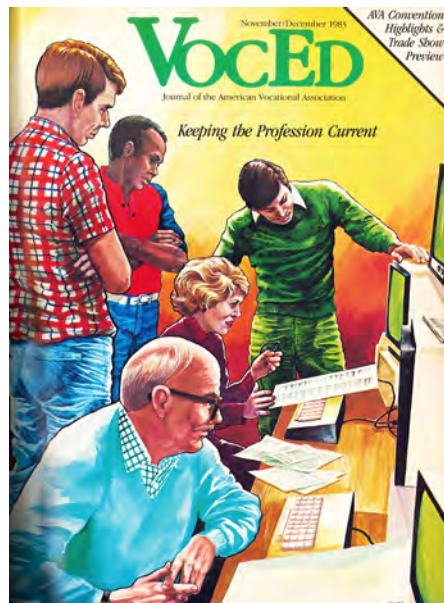


# American Vocational Association

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# Executive Directions

## Some Simple Truths About Teaching

by Gene Bottoms  
AVA Executive Director

It is sometimes a great temptation to look for complex answers when simple ones will do. I was reminded of this again when the long-awaited Coleman report was released. This study reveals that effective public and private schools enroll more students in advanced courses, assign more homework, have fewer absentees from school or class, have better discipline and have stronger teacher interest in students than are found in other schools. In other words, research has proved once more that the best schools ask more from their students and get it.

These truths are neither revolutionary nor complex. But they are much more difficult to act upon than to state. The same can be said of the simple truths that govern excellence in teaching.

Except for the person of the individual student, the teacher remains the most essential and critical element in a student's achievement. When certain basic precepts are followed in the classroom, students learn more; when teachers do not put these truths into practice, students learn less. Most of these truths continue to be validated through new research. This month, when we are devoting the entire issue of VOCED to teachers and teaching, I want to review these basic characteristics of effective teaching.

**Mastery of Field** Effective vocational teachers not only understand the content of an occupational field, but have the ability to perform in that field themselves. It is very difficult to teach what one does not know. Effective teachers keep up to date with changes in subject matter and master new scientific and technical information and techniques as they come into play. They are able to demonstrate the skills and thought processes current in the field.

**Planning Ways to Reach Goals** Effective teachers have instructional plans for reaching stated objectives. They build their teaching upon the needs, interests and abilities of individual students, helping them to modify learning objectives to reach particular career goals and to adapt to their own learning styles. Without the instructional plan, students can never arrive at the designated goals.

Good instructional plans are sufficiently flexible to permit changes to be made as needed. Vocational students learn best when they are involved in the learning process. Effective teachers identify instructional activities and put them into sequences that lead students to the intended learning.

**Setting Expectations** Students perform better when they know what they are expected to learn. Students who see that little is expected of them will produce just that little. Conversely, those who perceive that the performance expected of them is difficult and that mastery of a task is essential to their career goal will put forth greater effort.

These two factors—the difficulty of the task and the student's perception of its importance—are positively related to achievement. This is a crucial factor in vocational education, for students are sometimes led by people outside the field to the belief that vocational programs are intended for slow learners. Effective teachers let their students know that vocational programs are difficult, tough and demanding.

**Stressing the Task** It is a fact that students learn more from task-oriented teachers. Task-oriented teachers usually have a disciplined classroom where all students are working to accomplish assigned objectives. There is little loitering or horseplay. Task-oriented teachers tend to be willing to go the extra mile over and over again to help students master difficult assignments.

**Evaluation and Feedback** Students tend to learn more in classes where performance standards are met before students may move on to new tasks. Through evaluation and feedback, students learn that what they are doing is important. Through assessment, teachers communicate their concern that students master stated objectives which are essential for success in a career. Where assessment is inadequate and the students do not know how they are doing, they learn that neither they nor their occupational fields are worthy.

**Praising Accomplishment** For most people, recognition from an important person in their lives is a strong motivation to do well; vocational students are no exception. Effective teachers constantly look for opportunities to praise students for work of good quality.

Praise must not be artificial. Sometimes it is very difficult to find

anything to praise in the work of some students, but effective teachers are able to identify some bits of behavior to build upon. Praise then becomes the means to reach out and motivate the unmotivated student.

**Communicating Clearly** Effective teachers organize and communicate ideas and information so that they make sense to students. They choose illustrations and use language that students understand. They give clear assignments and instructions and make sure that students understand objectives and instructional materials.

**Stimulating Thought** By asking thought-provoking questions, effective teachers help students learn to define problems, analyze them, select a course of action and assess the consequences. Effective teachers go beyond questions of simple recall to matters of interpretation, explanation and problem-solving that give students opportunities to synthesize their knowledge and experience.

**Variety** There is convincing evidence that variety in learning activities results in increased learning. Effective teachers use variety in a purposeful way, choosing those learning activities which are most appropriate to the stated learning objectives.

**Enthusiasm** Students respond to teachers who communicate a sense of commitment, excitement and involvement. There is some evidence that they learn more from teachers who are enthusiastic about teaching, learning and the occupational field they teach.

Teachers demonstrate enthusiasm by their level of preparation for particular classes, by the attractiveness of their shop and lab areas and by their insistence that tools and equipment be cared for properly. Effective teachers offer assistance continually, moving around during lab time to check work and help individuals. Enthusiastic teachers create an openness between themselves and students and actively participate in the learning process.

These simple truths about effective teaching sometimes slip away from us in the press of daily demands upon our time and energy. Teachers already know all of them but, being human, they sometimes forget. We need to remind ourselves as often as is necessary that effective vocational education is dependent upon effective teachers. And when teachers follow the simple precepts listed here, students learn.



## Characteristics of Effective Teaching

Mastery of Field

Planning Ways to Reach Goals

Setting Expectations

Stressing the Task

Evaluation and Feedback

Praising Accomplishment

Communicating Clearly

Stimulating Thought

Variety

Enthusiasm

# 1987-2000



*Director of Consortium*  
Southern Regional Education Board, Atlanta, GA 1987-1996

*Vice President for School and Work*  
Southern Regional Education Board, Atlanta, GA 1996-1997

*Senior Vice President*  
Southern Regional Education Board, Atlanta, GA 1997-Present

Gene Bottoms is the founder of *High Schools That Work (HSTW)*, the nation's largest and most successful high school improvement network. He has provided leadership as the network has grown from its founding in 1987 as the SREB-State Vocational Education Consortium with 28 high schools in 13 Southern states to today when it serves more than 1,200 high schools within the 16-member SREB region and beyond. Since its inception 28 years ago, *HSTW* has served more than 3,000 of the nation's high schools.

*High Schools That Work is the nation's largest school improvement initiative for high school leaders and teachers.*

Video Orientation to *High Schools That Work (HSTW)* School Improvement Framework  
[http://www.sreb.org/page/1078/high\\_schools\\_that\\_work.html](http://www.sreb.org/page/1078/high_schools_that_work.html)

Successful Implementations of the *HSTW* Framework  
[http://www.sreb.org/page/1151/HSTW\\_success\\_stories.html](http://www.sreb.org/page/1151/HSTW_success_stories.html)

A Tribute to Gene Bottoms  
from Dr. John H. Preston

Brock Prize Judges ,

Whenever *High Schools The Work (HSTW)* is discussed and the effectiveness and enormity of the program comes to mind, it causes me to reflect on Gene Bottoms' determined leadership style and never-quit attitude. He very patiently developed the *HSTW* based upon his beliefs, educational philosophy, and the need to have valid and reliable evidence on the impact of the program. *HSTW* started in a small number of schools and now, because of its effectiveness, is operating in 1,200 high school sites resulting in increased student achievement and graduation rates.

Because of his diligence and hard work, his efforts have created educational opportunities that have positively changed the lives of thousands upon thousands of young people. His leadership created the nation's largest school improvement initiative for high school leaders and teachers.

The outgrowth of *HSTW* has evolved served as the foundation for other educational initiatives such as *Making Middle Grades Work (MMGW)*, *Technology Centers That Work (TCTW)* and many more impactful initiatives including college and career readiness and counseling, educator and school leader effectiveness, and your newest undertaking, *Advanced Careers*. Especially helpful to states are the Policy Analyses and Legislative Impact Studies generated by SREB and based upon your school improvement work.

I like to use snapshots to measure change and clarify difference. My two snapshots of his professional achievements are these. One taken of Gene Bottoms as his work began at the regional and national levels in the 1980's and one now of his professional achievements. These snapshots reveal an incredible accomplishment of the "hardest working man in education." Let me change that to the hardest working man I know.

Please know he has my utmost respect for all he has done. I am ever so hopeful that he will receive the Brock Prize and the national and international recognition he so richly deserves. I have enormous respect for his significant contributions to education.

Respectfully submitted,

John Preston, Ed.D.

***Dr. John H. Preston has worked extensively in the areas of international and career-technical education serving in a variety of positions such as the Executive Director, State of Georgia Board of Regents' Council for International Education for The University System of Georgia, 1994 to 1999, and the Chairman, Department of Vocational and Career Development, Georgia State University, Atlanta, Georgia, 1985 to 1992. He led the efforts for the Georgia Department of Education to improve the professional development experiences of career-technical educators as director of the Career-Technical Leadership Institute from 1974 to 2001.***

# HSTW

High Schools That Work



*Too many students find no reason to come to school, no excitement in learning, no goal for future work or studies, and no solid connection to an adult adviser or mentor. In such an environment, even students who enter high school on grade level can become disengaged.*

*Gene Bottoms*

Gene Bottoms  
SREB Senior Vice President

## 9 Key Priorities for HSTW

1. Provide challenging career pathways that prepare students for multiple options after high school- both postsecondary study and work
2. Support academic and career technical teachers to design quality assignments that engage students in learning required knowledge and skills and results in a product that demonstrates learning of the required content
3. Train all teachers to support students' overall literacy development, especially in grades nine and ten
4. Use a balanced approach to instruction in mathematics that emphasizes understanding, reasoning, and application of mathematics while building procedural fluency.
5. Implement a Counseling for Careers program designed to help students
6. Implement a range of extra help strategies and initiatives in order to help students meet raised expectations
7. Implement senior transition courses in literacy and mathematics to teach students the skills they need to learn and think independently after high school
8. Implement organizational structures that allow for teachers to collaborate across disciplines
9. Provide every school with leadership for continuous improvement and that supports on-going teacher development

# Teaching for Understanding through Integration of Academic and Technical Education

## Teaching *for* Understanding *through* Integration *of* Academic *and* Technical Education

By Gene Bottoms and Deede Sharpe

**Southern Regional Education Board**

### 10 Steps for Getting Started in Integrating Academic and Vocational Studies

1. Support teachers in learning how to work together in interdisciplinary teams
2. Establish a mission, goals, and objectives to guide administrators and teachers in developing integrated learning
3. Create a vision of school and classroom conditions that would improve learning for all students, particularly career-bound students
4. Conduct a needs assessment to determine student achievement in the school, particularly the achievement of career-bound youth
5. Support teachers in learning as much as possible about integrating vocational and academic education
6. Ask all teachers to identify eight to ten “big understandings” that their students will need for success beyond high school in a work or postsecondary setting
7. Ask teams of academic and vocational teachers to connect the “big understandings” from their disciplines with those of other teachers
8. Select an integration approach
9. Develop an integrated learning plan for addressing the “big understandings”
10. Review, revise, and improve integrated activities

*“This publication examines school and classroom practices that increase students’ understanding, raise their achievement, and equip them with knowledge and skills needed in today’s world.”*



Gene Bottoms  
SREB Senior Vice President

# MMGW

Making Middle Grades Work

Through SREB's middle grades initiative, SREB states are among the first in the nation to implement strategies that address the crucial middle grades and key transition into high school. Making *Middle Grades Work* (MMGW) helps states, districts and schools look at what they expect, what they teach and how they teach young adolescents to prepare for success in further education.

SREB

Improved Middle Grades Schools  
for Improved High School Readiness:  
Ten Best Practices in the Middle Grades

March 2012

Southern  
Regional  
Education  
Board

592 10th St. N.W.  
Atlanta, GA 30318  
(404) 875-9211  
[www.sreb.org](http://www.sreb.org)

*"The Middle Grades are where we need to begin to plant the idea that school is connected to each student's future."*



Gene Bottoms  
SREB Senior Vice President

Video orientation to Making Middle Grades Work  
[http://www.sreb.org/page/1080/making\\_middle\\_grades\\_work.html](http://www.sreb.org/page/1080/making_middle_grades_work.html)

The SREB middle grades goal is to ensure that all students perform at the basic level in reading, mathematics and science on the NAEP-based SREB Middle Grades Assessment and to increase the percentage of eighth graders who perform at the proficient level and who leave eighth grade ready for college-preparatory work in high school. These are the key findings.

1. Many students who expect to go to college are not taking the necessary courses in high school.
2. Some schools enroll many more students in college-preparatory courses than others. The difference is not explained by differences in students or demographics not explained by differences in students or demographics.
3. Enrollment in more demanding courses does not result in more failures. In fact, the evidence suggests that challenging content results in lower failure rates. It appears that many students in all kinds of schools can handle more challenging intellectual assignments than schools are willing to give them.
4. Taking algebra or pre-algebra in the middle grades leads to enrollment in higher-level mathematics courses in high school and does not increase failure rates.
5. Middle grades schools that successfully prepare students for college-preparatory courses in ninth grade provide extra help and link students with an adult mentor. Successful schools come in many sizes, and their students vary by ethnicity and socioeconomic status.
6. Teachers matter enormously; middle grades students who have teachers as advisers are more likely to have educational goals and plans for high school.
7. There are simple steps that middle grades and high schools can take to make sure almost all students will be successful in college-preparatory courses.

# 2000-Present



Learning-Center Leadership Development Program  
Link to 10-Year Progress Report

[http://publications.sreb.org/2012/12V17\\_ProgressOver\\_a\\_Decade\\_Benchmark.pdf](http://publications.sreb.org/2012/12V17_ProgressOver_a_Decade_Benchmark.pdf)

Technology Centers That Work Network  
Video link to Technology Centers That Work Orientation

[http://www.sreb.org/page/1084/technology\\_centers\\_that\\_work.html](http://www.sreb.org/page/1084/technology_centers_that_work.html)

SREB Commissions Studies - Accountability Systems, Middle Grades Schools,  
21st Century Career-Technical Education

The Next Generation of School Accountability: A Blueprint for Raising High School  
Achievement and Graduation Rates in SREB States

[http://publications.sreb.org/2009/09V17\\_Blueprint\\_Highschools.pdf](http://publications.sreb.org/2009/09V17_Blueprint_Highschools.pdf)

A New Mission for the Middle Grades: Preparing Students for a Changing World

[http://www.sreb.org/page/1094/middle\\_grades.html](http://www.sreb.org/page/1094/middle_grades.html)

Credentials for All: An Imperative for SREB States

[http://publications.sreb.org/2015/15V09\\_CTE\\_Comm\\_exe\\_sum.pdf](http://publications.sreb.org/2015/15V09_CTE_Comm_exe_sum.pdf)



# SREB



Southern Regional Education Board  
592 10th St. N.W.  
Atlanta, GA 30318  
Phone: (404)-875-9211  
Fax: (404)-872-1477  
sreb.org

August 14, 2015

Dear Brock Prize Jurors,

Since 2005, Gene Bottoms and I have worked closely on several special initiatives designed to help SREB's 16 member states lead the nation in educational progress. These joint efforts with policy makers from our states have sought to establish statewide college/career readiness policies aimed at increasing the percentage of state populations with a postsecondary certificate or degree.

During this past decade, SREB has convened three very important regional Commissions that addressed:

- Reform of School Accountability Systems
- Improvement of Adolescent Literacy
- Stronger Middle Grades Education
- Effective School-to-Postsecondary Pathways Resulting in More Students Earning Postsecondary Credentials and Degrees

Each commission was chaired by the Governor of a member state and involved 30-40 state leaders. These commission reports are highly influential and lead the work of states, districts, and schools to improve education. Gene Bottoms has been the critical person in the success of these efforts.

I also want to recognize Gene's foundational and continuing leadership of the High Schools That Work (HSTW), Making Middle Grades Work (MMGW), and Technology Centers That Work (TCTW) networks of over 1600 member schools. Gene started all of these programs and has built them into the most comprehensive and active school improvement system in the country. His vision and untiring first-hand work with a tremendous range of state policy makers, school leaders and teachers have sustained these school improvement achievements throughout the nation.

During his long career of public service, Gene Bottoms has touched the lives of tens of thousands of students and their teachers and school leaders. The annual staff development conference that he originated 29 years ago still draws several thousand practitioners every summer focusing on the theme of "by practitioners for practitioners." Currently, he is pursuing his vision for a rigorous, integrated secondary school curriculum that combines academics and technical studies. His long-term view is that Advanced Careers will become for career-technical education what Advanced Placement has become for academic courses.

I recommend him to you without hesitation. He doesn't just talk about things – he does things! He is most deserving of the Brock Prize and his many published works and documented best practices will contribute greatly to the Foundation's repository – the Best Ideas Network.

Sincerely,

David S. Spence, President

BILL & MELINDA  
GATES foundation

PO Box 74350  
Seattle, WA 98107 USA  
V 206.709.3100  
F 206.709.3180  
www.gatesfoundation.org

July 31, 2015

Doug Major, Ed.D.  
Meridian Technology Center  
1312 South Sangre Road  
Stillwater, OK. 74074

Dear Doug,

It is a great honor to nominate my friend and long-time colleague, Dr. Gene Bottoms for the Brock International Prize in Education.

As a longtime champion of public schools, Dr. Bottoms has served the South and the nation for more than a generation by doing what few others can: promoting honest conversation about education in service of *all students* achieving, in particular, career-bound youth.

In 1987, Dr. Bottoms worked with the Southern Regional Education Board State Vocational Education Consortium to create High Schools That Work (HSTW). Through his leadership, HSTW has grown into the largest effort in America to improve high schools for career-bound students. From 28 pilot sites in 13 states, there are now more than 1,200 HSTW sites in 30 states and the District of Columbia that use the network's key practices to raise student achievement and graduation rates.

Key components of HSTW include rigorous academic standards for each and every student that connect to real, authentic problems and projects; that each student develops academic and career goals beyond high school; that a student's course of study in high school is about creating a plan and path to achieve their goals; and that schools provide students with the necessary supports to achieve their goals.

In a PBS [interview](#) for *MAKING SCHOOLS WORK with Hedrick Smith*, Dr. Bottoms reflected on why he created High Schools That Work:

"Most of us come to believe in ourselves when an adult first believes in us. When we started doing this work in high school, there were literally hundreds of thousands of students in high school who belonged to no one. No one knew them."

The heart of learning is this connection between teachers and students. Dr. Bottoms understands the power of this bond and that through it, teachers are able to challenge and push each student to do the most relevant, challenging work they can:

"...If you enroll those students in very rigorous academic courses, and you give them the kind of assignments that they can see the meaning of what you're asking them to learn, and you can link that for some students to a career in technical studies, and if you really believe they can learn, and you'll give them the kind of support they need, most all students can learn at the level we historically taught only our best students in the past."

Throughout his distinguished career, Dr. Bottoms has combined policy and practice in ways that work for teachers and students. His service has earned him a place in the front rank of American educators, and our country owes him an unpayable debt. I am proud to count him as a colleague and nominate him for the prestigious Brock Prize.

Sincerely,



Dr. Vicki Phillips  
Director of Education, College Ready  
Bill & Melinda Gates Foundation

# *Ann Benson, Ed.D*

Education Consultant

1416 S. Ashton Ave., Stillwater, OK 74074

Office (405) 743-2919 Cell (405) 880-5383 Fax (405) 533-3721

gben@brightok.net

Selection Committee  
Brock International Prize in Education

To Whom It May Concern:

It is a pleasure to write a letter in support for Dr. James E. Bottoms, Senior Vice President of the Southern Regional Education Board (SREB), to receive the prestigious Brock International Prize in Education.

When contacted by Dr. Doug Major, one of the award jurors, asking if I would write a letter to nominate Dr. Bottoms because of his impact on the world of education, it was a delight to reflect on the almost four decades of knowing and working with Dr. Bottoms.

My first recollection of meeting him was during his tenure as the Executive Director of the American Vocational Education. My work with several of the states in the central part of the country had taken me to North Dakota. Little did I know that an accidental breakfast meeting with this man would lead to a long tenure of following his career.

In the mid 1980s, he was asked to join the Southern Regional Education Board in Atlanta, Georgia to improve the quality of students pursuing a career through vocational (career-technical) education. It was apparent that his experiences working as a teacher, principal, and guidance counselor before joining the Georgia Department of Education to oversee the improvement of vocational and academic education were important. He carried these experiences to drive the work of the national association, so he was a natural to initiate the work of SREB.

His dream of improving the academic and career success of all students led to the founding of High Schools That Work, Making Middle Grades Work and Technology Centers That Work. Teachers and students in more than 1,500 schools in 35 states are now involved in our country's largest school improvement efforts. In addition, there are many other schools throughout the country that have adopted the key practices and goals of these initiatives.

Since these initiatives were developed, my work with Dr. Bottoms had allowed me to serve as one of his board members and later as a consultant for his leadership to improve the quality of the shared-time centers throughout the country. I've watched him work with students in small rural as well as inner-city schools, heard him make presentations to state and national audiences, and observed his work with state education leaders as well as governors and state legislators. He is often called upon to advise national education policy, and has served as an international consultant to other countries. In all areas of his work, he shows his passion for improving the academic performance of students, thus leading to their postsecondary education and career success.

Dr. Bottoms is an active and devoted leader in his church. One of my memories of speaking with his wife about whether or not Dr. Bottoms would ever retire. She told me that it had been suggested that he retire from his job and become a missionary. Her response was "school improvement is his mission."

This statement exemplifies his devotion to education and why it would be such an appropriate recognition of his work by being named as the recipient of the Brock International Prize in Education. Dr. Bottoms not only had a vision, he has also developed it in a way to have a profound impact of our country and world.

Respectfully submitted,

Ann Benson, Ed.D  
State Director, Retired  
Oklahoma Department of Career and Technology Education

# TCTW

Technology Centers That Work

The Technology Centers That Work (TCTW) school improvement initiative was formed in 2007 to help these shared-time centers review and implement the actions needed to produce high-demand, high-wage graduates who will be leaders in their selected careers. The network now includes more than 180 sites in 18 states.

SREB provides member sites with staff development, technical assistance, publications and assessment services. TCTW sites participate in the biennial High Schools That Work (HSTW) Assessment and the TCTW Teacher Survey, designed specifically for teachers in shared-time centers.

SREB

## Recognizing Academic Achievement in Career/Technical Education



### Conditions for Awarding Academic Credit for Career/Technical Courses

Southern  
Regional  
Education  
Board

592 10th St. N.W.  
Atlanta, GA 30318  
(404) 875-9211  
www.sreb.org



*“Students need opportunities to discover their interests, to develop long-term goals, to understand linkages between education and career goals, and to develop the habits that will allow them to achieve their goals.”*

Gene Bottoms  
SREB Senior Vice President

**Benefits to students:** TCTW improves students' academic and career/technical knowledge and skills. It shows students the connection between high school studies and their futures and encourages them to prepare for the next step, which often combines work and further study.

**Benefits to parents:** Parents become partners in students' education as they participate in planning students' programs of study, are informed to assist in making decisions about postsecondary and career options, and are updated regularly about students' progress to keep them on track to meet academic and career goals.

**Benefits to teachers:** Teachers gain confidence in their abilities to help all students complete challenging studies. They work together to create more rigorous instruction and plan professional development activities aimed at raising student achievement.

**Benefits to principals/center directors:** School administrators strengthen their leadership skills as they deal with scheduling, staffing and curriculum design issues resulting from offering a high-quality curriculum to all students. They become more adept at using the incremental process - planning, doing, reviewing, making new plans and revising old ones - to improve student learning.

**Benefits to schools:** Schools receive data about students' strengths and weaknesses in reading, mathematics, science and career/technical studies. Teachers, administrators and community members base action plans on this information. The result is improved communication among faculty and staff, students, parents, employers and postsecondary institutions.

**Benefits to educational reform:** States adopt new long-term strategies for working with the shared-time centers to support local school systems as they strive to improve the middle grades and high schools. School leaders and teachers in all locations discover that they can raise the achievement of all students, including those previously underserved.


**Benefits to the community and nation:** Challenging programs of study raise students' communication, mathematics, science and technical skills; they increase students' earning potential and raise the bar of achievement for everyone.

# LCLP


Learning-Centered Leadership Program

SREB's Learning-Centered Leadership Program works with district, state and university partners to prepare aspiring principals and school leadership teams to aggressively lead improvement in curriculum, instruction and student achievement.

Over the past 10 years, the Southern Regional Education Board (SREB) has helped states and public universities across the region evaluate their state policies for preparing school leaders and has supported them in redesigning their principal preparation programs to position the principal as the instructional leader of the school. It has been a long but productive process. In states where policy-makers and educators have followed SREB's policy footprints, better-prepared principals have emerged who have implemented best practices for improved student achievement.




**Turnaround High School Principals:  
Recruit, Prepare and Empower  
Leaders of Change**



Southern  
Regional  
Education  
Board

592 10th St. N.W.  
Atlanta, GA 30318  
(404) 875-9211  
www.sreb.org



*“In rural, urban or suburban America, a school district without a principal succession plan that includes these key components is a district that will never achieve maximum student and school performance.”*



Gene Bottoms  
SREB Senior Vice President

## 12 Policy Actions to Dramatically Improve Leadership in Turnaround High Schools

1. Create state or regional programs to select and train experienced principals to serve as turnaround specialists.
2. Provide incentives for experienced principals to accept the turnaround challenge.
3. Develop and continuously improve principal selection tools that can predict success in turnaround settings.
4. Increase per-student funding for principal preparation.
5. Support ongoing, individualized professional development specifically for turnaround leaders.
6. Create “enterprise zone” rules for turnaround high schools, providing expanded authority over personnel decisions, schedules, and improvement strategies.
7. Support the development and deployment of high-quality formative assessment lessons.
8. Provide principals with regular data “snapshots” about the culture and climate of their schools.
9. End seniority-based layoff policies that disproportionately impact schools in need of turnaround.
10. Provide incentives to encourage veteran teachers and promising novice teachers to work in turnaround high schools.
11. Change the toxic “scoreboard” mentality that currently surrounds high stakes testing results.
12. Create pathways for success in high schools — particularly turnaround schools.

# SREB

Comission Reports

SREB

Southern  
Regional  
Education  
Board

592 10th St. N.W.  
Atlanta, GA 30318  
(404) 875-9211  
[www.sreb.org](http://www.sreb.org)

## The Next Generation of School Accountability:

*A Blueprint for Raising High School  
Achievement and Graduation Rates  
in SREB States*

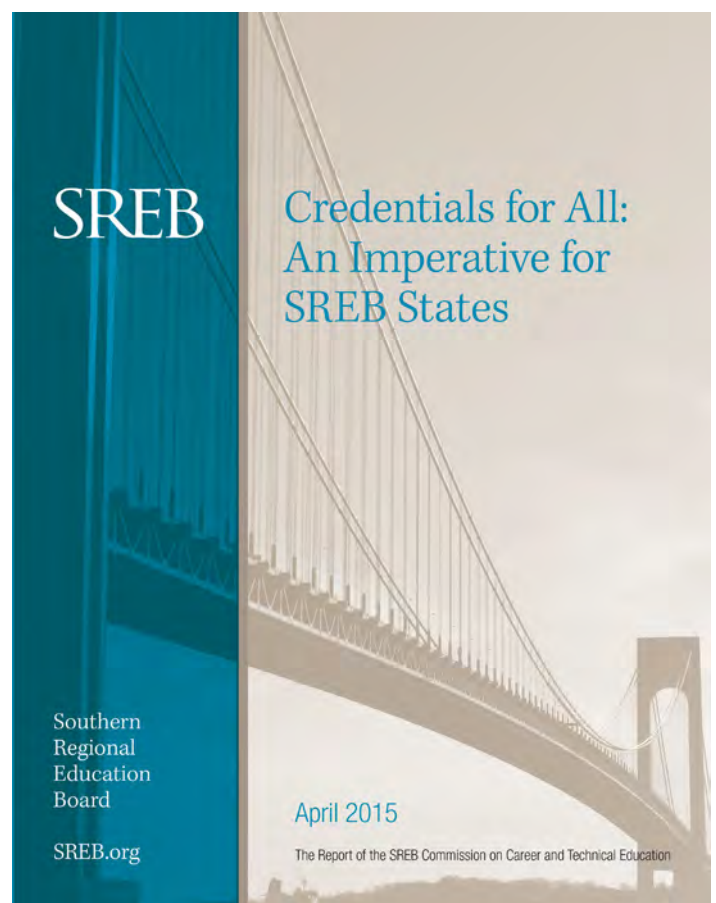
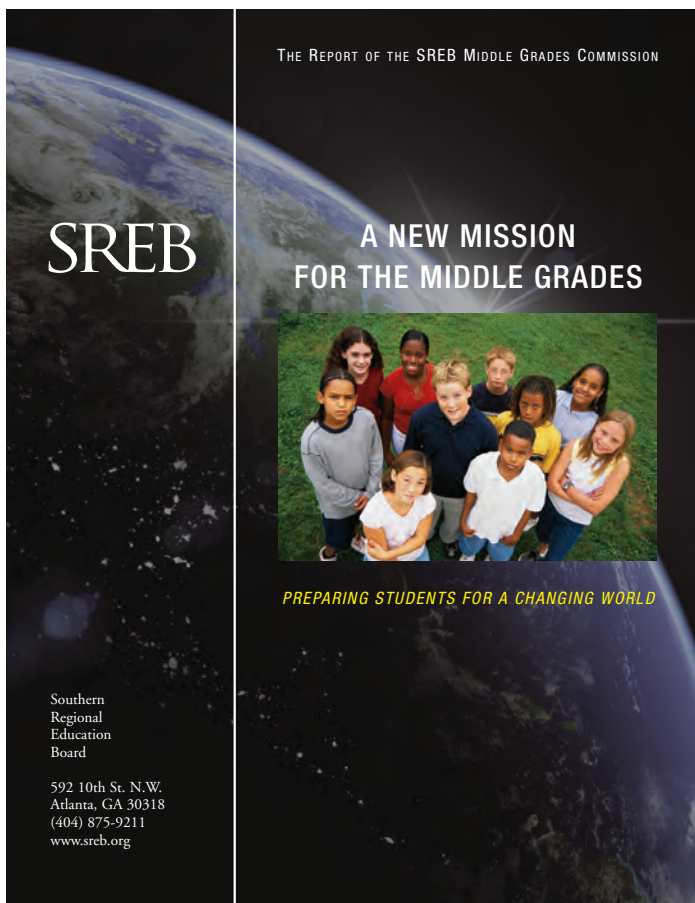


Gene Bottoms, SREB senior vice president

“Continuing current accountability systems will get you minimum gains. It will not get you what you want. States need to encourage schools to help students meet higher standards than only the minimum academic standards measured by many state exams.”

# SREB

Commission Reports



## The Challenge:

How do we help more young people earn the postsecondary credentials and degrees that matter in today's economy?

Simply put, the bridge from high school to postsecondary attainment and career opportunities is broken. To solve this problem, more high school students must get into community and technical colleges — and on pathways to postsecondary attainment and career advancement — much sooner.

The SREB Commission on Career and Technical Education brought together legislators, educators and experts from across the United States to explore how to build career pathways that lead from high school to postsecondary education and training programs and good-paying jobs in high-demand fields.

The Commission's report, *Credentials for All: An Imperative for SREB States*, offers states eight actions, supported by examples of policies and practices, that can help states reach this goal: Double the number of young adults who hold a relevant credential or degree by the age of 25.

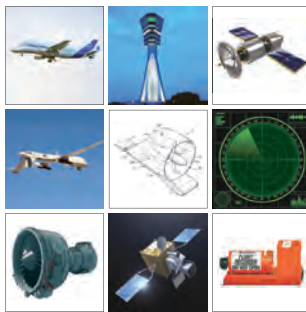
Kentucky Governor Steve Beshear chaired the Commission, which began its work in December 2013 and published its final recommendations in April 2015. *Members of the Commission*

Advanced Career is the culmination of years of work in states around the country through the nation's largest school improvement network at SREB. The result is a turnkey pathway that includes everything a school needs to be sure it works, from curriculum to assessments to extensive training and support for teachers.

The goal: Students master complex academic and technical concepts and graduate ready for the workplace, technical colleges and universities.

## Aerospace Engineering

Course 1: Fundamentals of Aerospace Technology  
Syllabus



College or Career?...Why Not Both?

*"It flips the switch for those students who aren't sparked by traditional teaching styles and gives them a new way to learn the higher-level college- and career-readiness academic skills."*

*Gene Bottoms*

Gene Bottoms  
SREB Senior Vice President

### Key Features That Form the Advanced Career Process

1. Develop CT courses that meet the test of being intellectually demanding by providing students numerous assignment opportunities
2. Develop a sequence of four CT courses with embedded Common Core State Standards or other rigorous standards for college- and career-readiness
3. Align a non-duplicative sequence of four secondary courses to continued postsecondary study with a college-ready academic core
4. Convene communities from industry, secondary education, postsecondary education and CT fields to design rigorous CT courses built around challenging authentic projects
5. Devise the curricula, course syllabi and fully developed project units to ensure scalability of quality across states and schools
6. Recognize the value of using end-of-project and end-of-course exams to give students an opportunity to demonstrate their ability to read complex materials and to express their understanding through writing.
7. Provide two weeks of training for instructors to teach each of the courses.
8. Create a school organizational structure — an academy design — that provides opportunities for Advanced Career teachers to work with mathematics, science and English teachers in planning blended learning experiences.
9. State conditions for which some academic credit could be awarded for Advanced Career courses.



# AC

Advanced Career



# College or { Why not both? } career?

**SREB** | High Schools  
That Work  
ADVANCED CAREER

*“This is what modern career and technical education looks like.”*



Gene Bottoms  
SREB Senior Vice President

*“In the world of education, the wheel turns. After decades of fixation on testing and academics, it is now slowly turning back to a re-consideration of job-related training in high schools. Gene Bottoms must not only be commended for his fight to retain that aspect of schooling during many lonely days, he also should be honored for improving the quality of this educational strategy.”*

*Jack Jennings, Former General Counsel,  
U.S. House of Representatives*

# Publications

Dr. Bottoms is the author of many publications and research briefs, including *Making High Schools Work*, a widely distributed and cited book outlining a high school reform framework that integrates academic and vocational studies. In addition, he has led the development of more than 100 guides and other types of publication on school improvement and directs an annual conference and national workshops program that serves more than 10,000 educators annually. The networks' assessment program, referenced to the National Assessment of Educational Progress, has resulted in a large database of information about the impact of school and classroom practices on student achievement.

He is a frequent presenter and panelist at national conferences and is often requested to speak at state legislatures, U.S. Congressional Meetings, the U.S. Department of Education, and with governors and their legislative staffs and Chief State School Officers and state agency personnel.

The complete collection of his publications and presentations for SREB is available at [www.sreb.org](http://www.sreb.org). The following are selected more recent examples available in digital format via the hyperlinks below.

## ***High Schools That Work Publications***

*Credentials for All: An Imperative for SREB States*

*Executive Summary | Credentials for All: An Imperative for SREB States*

*Students Step Up When Teachers and Leaders Transform Classrooms*

*Case Study - Lee's Summit West High School: Empowering Students to Succeed*

*Case Study - Fort Mill High School: A Culture of Continuous Improvement*

*Case Study: Blackman High School - Raising Expectations of All Students*

*Case Study: Wren High School -- Closing the Graduation and Readiness Gap*

*Case Study: Fred J. Page High School*

*Changing How Students Learn and Teachers Teach*

*Progress Over a Decade in Preparing More Effective School Principals*

*Recognizing Academic Achievement in Career/Technical Education: Conditions for Awarding Academic Credit for Career/Technical Courses*

*Are School-Related Jobs Better?*

*Access to Challenging and Relevant Learning Opportunities Improves Achievement for All*

*High Schools That Work Goals and Key Practices Poster*

*Skills for a Lifetime: Teaching Students the Habits of Success*

*Getting Students Ready for College and Careers: Transitional Senior Mathematics*

*High Schools That Work: An Enhanced Design to Get All Students to Standards*

### **Making Middle Grades Work Publications**

*Research Brief/Middle Grades: Quality Teaching Equals Higher Student Achievement*

*Changing How Students Learn and Teachers Teach*

*Improved Middle Grades Schools for Improved High School Readiness: Ten Best Practices in the Middle Grades*

*Skills for a Lifetime: Teaching Students the Habits of Success*

*Establishing Benchmarks of Progress for Middle Grades Sites*

*Making Middle Grades Work: An Enhanced Design to Prepare All Middle Grades Students for Success in High School*

*Preparing Middle Grades Students for High School Success: A Comparative Study of Most- and Least-Improved Middle Grades Schools*

### **Technology Centers That Work Publications**

*Credentials for All: An Imperative for SREB States*

*Executive Summary | Credentials for All: An Imperative for SREB States*

*Case Study: Summit Technology Academy*

*Recognizing Academic Achievement in Career/Technical Education: Conditions for Awarding Academic Credit for Career/Technical Courses*

*Case Study: Wes Watkins Technology Center*

*Case Study: Hunterdon County Polytech Career Academy*

*An Undeveloped National Resource: The Unrealized Potential of the Nation's Career/Technical Centers*

*Technology Centers That Work Goals and Key Practices Poster*

*Getting Students Ready for College and Careers: Transitional Senior Mathematics*

*Ready for Tomorrow: Six Proven Ideas to Graduate and Prepare More Students for College and 21st-Century Careers*

*Technology Centers That Work: An Enhanced Design to Get All Students to Standards*

## **Improving Career-Technical Education Publications**

*Improving the Quality of Career and Technical Alternative Teacher Preparation: An Induction Model of Professional Development and Support*

*Ready for Tomorrow: Six Proven Ideas to Graduate and Prepare More Students for College and 21st-Century Careers*

*Measuring Technical and Academic Achievement: Employer/Certification Examinations' Role in High School Assessment*

*Actions States Can Take to Place a Highly Qualified Career/Technical Teacher in Every Classroom*

## **School Leadership Publications**

*Progress Over a Decade in Preparing More Effective School Principals*

*Turnaround High School Principals: Recruit, Prepare and Empower Leaders of Change*

*Who's Next? Let's Stop Gambling on School Performance and Plan for Principal Succession*

*The Three Essentials: Improving Schools Requires District Vision, District and State Support, and Principal Leadership*

*School Leadership Change Emerging in Alabama: Results of the Governor's Congress on School Leadership*

*Preparing a New Breed of Principals in Tennessee: Instructional Leadership Redesign in Action*

*The District Leadership Challenge: Empowering Principals to Improve Teaching and Learning*

## **Best Practices Newsletters**

*At the conclusion of each annual HSTW Staff Development Conference, SREB releases eight newsletters that feature practical strategies and inspiring stories garnered from presentations during the event. We've collected hundreds of stories to aid teachers and administrators in all areas of education.*

*Best Practices From the...*

*2014 HSTW Staff Development Conference*

*2013 HSTW Staff Development Conference*

*2012 HSTW Staff Development Conference*

*2011 HSTW Staff Development Conference*

*2010 HSTW Staff Development Conference*

*2009 HSTW Staff Development Conference*

*2008 HSTW Staff Development Conference*

*2007 HSTW Staff Development Conference*

*2006 HSTW Staff Development Conference*

*2005 HSTW Staff Development Conference*

# Advanced Career

## Webinar Series

Explore Advanced Career (AC) pathway programs — new types of career-technical curricula that provide a rigorous and relevant blend of technical and academic skills in authentic projects that engage students in preparing for postsecondary options and careers.

Each webinar will provide an in-depth look at a specific AC curriculum with examples of course projects that engage students in learning academic and technical content to become college- and career-ready.

We invite you to view recordings of the webinar series to learn more about the AC pathway programs that schools can add to their career-technical program offerings.

### **Global Logistics**

The Global Logistics & Supply Chain Management (GLSCM) curriculum enables students to practice innovative and critical thinking skills as they develop solutions to authentic logistics problems. The webinar will explore this new GLSCM curriculum with examples of projects that help students understand the roles of logistics and supply chain management in moving goods and services in a global economy.

[Click here to view recorded webinar.](#)

### **Integrated Production Technologies (formerly Advanced Manufacturing)**

The Integrated Production Technologies (IPT) curriculum engages students in using innovative industry-driven technologies to imagine and design new and improved products using automated computer-aided design and manufacturing programs. The webinar will explore this new IPT curriculum with examples of projects that help students understand the product life cycle as they create designs for use in the manufacturing process as well as evidential resource recover.

[Click here to view recorded webinar.](#)

### **Energy and Power**

The Energy and Power (EP) curriculum enables students to understand the interplay of the generation, distribution and use of energy. The webinar will explore this new EP curriculum with examples that illustrate how students research, design and build a series of authentic, hands-on projects that will facilitate their learning about the integration of engineered systems and require them to apply literacy, math and science concepts to solve authentic, challenging problems.

[Click here to view recorded webinar.](#)

### **Informatics**

Informatics is the process of taking raw data and converting it into new knowledge that can be applied to any field while considering its impact on individuals, organizations and society. The webinar will explore this new Informatics curriculum with examples that illustrate how students apply software systems such as Excel, Access and other industry software to acquire, collect, store and communicate data in a meaningful way to clients; manage projects; work in teams; think critically; solve problems and propose solutions to design problems.

[Click here to view recorded webinar.](#)

## **Clean Energy Technology**

The Clean Energy Technology (CET) curriculum enables students to apply fundamental science and operating principles of clean energy systems to authentic problems. This webinar will explore the curriculum with examples of CET projects that help students understand motors and generators, photovoltaic systems, water and energy conservation, wind turbines, biofuel generation, bioreactors, water power, energy harvesting, fuel cells and nuclear power.

[Click here to view recorded webinar.](#)

## **Health Informatics**

The health-care industry needs workers who can design, manage and use technology to analyze data and information that can inform better health-care decisions, and in turn, improve the delivery of health-care services. Advanced Career Health Informatics (HI) introduces students to the discipline through a series of authentic projects that merge information science, computer science and health care. This webinar will explore the HI curriculum with examples of projects that require students to use information technology, data analysis software and statistics to address a range of health-related topics.

[Click here to view recorded webinar.](#)

## **Innovations in Science and Technology**

The Innovations in Science and Technology (IST) curriculum will develop students' technological literacy and stimulate their interest in pursuing a career in science, technology, engineering and mathematics (STEM). The webinar will explore the IST curriculum with examples of projects that require students to solve science and technology problems, learn to apply the habits of mind and behavior unique to STEM professionals, and utilize National Instruments' LabVIEW software and myDAQ data acquisition devices to work as engineers in making and analyzing scientific measurements.

[Click here to view recorded webinar.](#)

## **Aerospace Engineering**

How can aircraft become faster, economically feasible and environmentally friendly? How can we use technology employed in space exploration and apply it to exploring unknown territory such as the ocean floor? The Advanced Career Aerospace Engineering (AE) pathway curriculum helps students answer these questions. This webinar will explore the AE curriculum with projects that require students to design, build, test and analyze the science behind the forces and physical properties of aircraft, rockets and unmanned vehicles. It will show how students utilize tools such as Excel, LabVIEW and sensing systems to collect and analyze data, and how projects require students to apply literacy, mathematics and science concepts and use technology to effectively solve authentic, challenging problems.

[Click here to view recorded webinar.](#)