REPORT OF THE
COMMISSION ON THE FUTURE OF
PUBLIC EDUCATION (HJR 196)

# BLUEPRINT FOR EDUCATIONAL EXCELLENCE

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA


## HOUSE DOCUMENT NO. 48

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VIRGINIA
COMMISSION
ON THE
**FUTURE**
OF PUBLIC EDUCATION

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January 14, 1998

TO: The Honorable James S. Gilmore, III

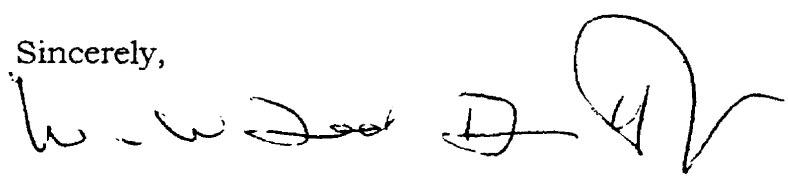
and

The General Assembly of Virginia

The report contained herein is pursuant to House Joint Resolution 186 as approved by the 1996 General Assembly.

As requested, the Commission on the Future of Public Education has outlined a vision and mission for the future of public education in Virginia. Forty-five recommendations spell out the proposed strategic plan for achieving the vision and mission.

Sincerely,



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Members of the Commission's advisory task force served on the subcommittees with Commission members.

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# Foreword

The Commission began to respond to its broad-ranging charge under House Joint Resolutions 196 in early June, 1996. An assessment of the breadth of our charge indicated that we would have to have the full-time assistance of staff, if we were to take more than a superficial view of the areas we had been assigned to study.

We were able to enlist Karen Washabau, former director of the Department of Planning and Budget in the Wilder administration, as director on a part-time basis. Dr. Helen Rolfe, a member of the professional staff of the Virginia Education Association for 20 years, was hired to manage the project.

We enriched our base of knowledge by appointing an advisory task force composed of private citizens, educators, representatives from business and industry and organizations such as the state-wide Virginia Congress of Parents and Teachers. The task force met each month with the full Commission and each advisory member worked on one or more subcommittees.

Our indebtedness to each and every one of these people for their dedication to the task and passion for public education of Virginia could not be greater. The Commonwealth, its public schools, and its children will be the beneficiary of the work of these extraordinary people for many years to come.

My personal thanks are especially extended to Karen Washabau, Helen Rolfe, and Harlean Owens. Their talent, dedication, perseverance throughout the work of the Commission was critical.

To the members of the Commission's Steering Committee, Hunter B. Andrews, Sen. Warren Barry, Sen. John H. Chichester, Del. J. Paul Councill, Sen. Emily Couric, Del. Alan A. Diamonstein, The Hon. A. Linwood Holton, Sen. Stanley C. Walker, and Alan L. Wurtzel, whose overall guidance throughout the last year and a half carried us through, I thank each of them, personally, for their support and insight into the complexities of our task, for ensuring we stayed under budget, and for making our final product possible.

# Prologue

Our Commission was directed to define the mission of public education and devise strategies to accomplish that mission. We have diligently strived to do so. Forty-five recommendations are presented in this report, ranked in priority. Projected cost estimates are included. We urge the General Assembly to consider them all.

It became clear to a substantial majority of the members of the Commission that if we are to accomplish our mission, the Commonwealth must see that each student finishes his or her secondary education with the ability to use what he or she knows. The ability to apply what one knows was demonstrated to the Commission to be at the highest level of cognitive ability and skill development, and to be essential for each student to have the chance for true success in college, in work and in life.

Alfred North Whitehead addressed the importance of being able to apply what one has learned:

> **Education is the art of the utilisation** [sic] **of knowledge.** [emphasis added] ...Theoretical ideas should always find important application within the pupil's curriculum. This is not an easy doctrine to apply, but a very hard one. It contains within itself the problem of keeping knowledge alive, of preventing it from being inert, which is the central problem of all education.[1]

Dr. Gene Bottoms of the Southern Regional Education Board and Dr. Chris Pipho of the Education Commission of the States strongly encouraged that Virginia move systemically to enable our schools and teachers to develop these skills in their students. Other support came from the National Alliance for Business, the National Science Foundation, the Virginia Education Association, the Virginia Mathematics and Science Coalition, the Virginia Manufacturers Association, the Virginia Educational Research Association, and countless other professional organizations and interested citizens.

Even though the application of knowledge is used and taught in the finest public and private high schools in America, and by the best teachers, and particularly for the top ten percent of the students, in colleges, universities, law and medical schools, and in the college prep International Baccalaureate program, it is not used systemically throughout our public schools.

The Commission was advised that applied learning is not systemically incorporated in the classroom for two reasons. First, we have not required children to demonstrate on our assessments their ability to solve problems, think critically, and apply generally what they have learned.

The world's leading nations have concluded that it is so important that a school child be able to demonstrate how he or she can apply knowledge, solve problems, write critical essays, and think critically across disciplines that it has become the world-class standard for educational achievement and assessment. Students are required to provide the information for test items on these international assessments.

> The kind of knowledge most easily measured using [multiple-choice, objective] items is recognition of facts. With care and creativity, multiple-choice items can be constructed to

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1 Alfred North Whitehead, *The Aims of Education and Other Essays* (New York: The Free Press, copyrighted 1929, paperback edition 1967) pp. 4-5.

measure more complex understandings, but fundamentally they are limited to "convergent thinking processes. There must be a **single correct answer** [emphasis added] (or set of correct answers) to be selected from a list provided. This alone places a basic limit on the ranges of knowledge and skills that multiple-choice questions can measure.[2]

International assessments like the Third International Mathematics and Science Study (TIMSS) routinely include items that require students to provide short and extended responses. The United States's National Assessment of Educational Progress also asks students to provide the answers they calculate or write a description of the solution to a problem.

The second reason why applied learning is not incorporated into everyday learning is that it is a challenging doctrine to apply, and teachers have not uniformly had the training or resources necessary to implement it within the curriculum or their classrooms. As a consequence, the Commission has prioritized training for teachers in the Standards of Learning and the ability to teach students how to apply what they have learned.

We have a rare opportunity to move Virginia forward. One of the Commission members said, "If we can fully integrate applied learning in every child's education across the Commonwealth, then we can move mountains."

That is our vision — that we will move mountains for each and every child in Virginia — assuring that on graduation they will have the knowledge and skills necessary to make them successful in college, work, and life.

William W. (Ted) Bennett, Jr., Chairman
Commission on the Future of Public Education

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2 E. H. Haertel, Form and Function in Assessing Science Education. In A. Champagne, B. Lovitts and B. Calinger (Eds.) *Assessment in the Service of Instruction* (Washington, D.C.: American Association for the Advancement of Science, 1995) p. 18.

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# EXECUTIVE SUMMARY

The Commission on the Future of Public Education, established by the 1996 General Assembly (HJR 196), was specifically charged to develop a vision for public education consistent with the General Assembly's constitutional mission and a strategic plan for accomplishing the vision. The following recommendations are proposed in four major sections to implement the Commission's vision and mission.

## I. Rigorous Instruction for Collegiate and Workforce Preparedness

Application of Knowledge

1. The Standards of Learning in all subject areas shall be subject to regular review and revision to (1) maintain rigor in all subject areas and (2) reflect a balance between content knowledge and the application of knowledge in preparation for eventual employment and lifelong learning.

2. The Board of Education shall establish Standards of Learning for an articulated technological studies program in grades K-12.

3. Assessments of student performance shall evaluate critical thinking and the application of knowledge and skills, and the Department of Education, with the assistance of independent nationally-recognized testing experts, shall be responsible for conducting an on-going analysis and validation process for these assessments. The first report of this analysis shall be made to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.

4. New Standards of Learning for vocational education shall require the full integration of English, mathematics, science and social studies SOLs and incorporate a process for assessments, reporting, and consequences. All occupational vocational programs shall be aligned with industry and professional standard certification by the year 2002.

5. The requirements for a standard high school diploma shall include a concentration of courses selected from a variety of options. This concentration shall be planned to ensure the completion of a "focused career preparation" sequence in career, technical, or arts education developed by the respective school divisions consistent with Board of Education guidelines and approved by the local school board and the Board of Education.

6. The requirements for a high school diploma shall include one credit in fine or performing arts.

7. The Department of Education shall study the feasibility of various methods and tools designed to focus students' attention on future education and career plans and shall report to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.

8. The General Assembly should consider legislation which permits, as a local option, the formation of a limited number of carefully monitored charter schools within the state's public school system. These schools must admit eligible student applicants based on a lottery system to ensure fairness in attendance policies, and they must comply with all federal and state anti-discrimination laws, regulations, and court orders. They will not be exempt from the Standards of Quality, Standards of Accreditation, or Standards of Learning. Teachers in charter schools must

be licensed to teach.

## II. Increasing Capacity

Professional Development

9. Effective after June 2001, graduates of Virginia institutions of higher education will be licensed as teachers only if the endorsement areas offered at such institutions have been assessed by a national accrediting agency or by an enhanced state approval process with final accreditation by the Board of Education.

10. To encourage talented students, particularly minorities and men, into teaching in shortage areas, the Teaching Scholarship Loan program shall be expanded by providing 200 scholarships per year to eligible candidates.

11. Clinical faculty and mentor teacher programs shall receive increased state support.

12. The Department of Education shall provide and teachers shall participate in intensive training to prepare those teachers who teach the revised English, mathematics, science, and social studies Standards of Learning in instructional methods that recognize different learning styles and teach children how to apply knowledge.

This training shall include a one-time intensive three-week training program of professional development over a four-year period that focuses not only on the four core SOLs, but also on (1) teaching strategies and methodologies that emphasize application of knowledge, linking assessment with instruction, (2) the use of educational technology for instruction, (3) working with parents, and (4) technological studies.

13. A program of lead teachers in mathematics, science, technological studies, English, and social studies shall be established and maintained to provide support for elementary and secondary school teachers. The program shall be phased in over a ten-year period, beginning in 1999-2003 with mathematics and science lead teachers in elementary and middle schools and phasing in English, social studies, and technological studies lead teachers in 2004-2008 in elementary, middle, and high schools.

14. The Board of Education shall establish leadership standards for superintendents and administrators and shall provide leadership training programs that superintendents and administrators are required to successfully complete as a condition of licensure.

15. The Department of Education in collaboration with professional organizations involved in teacher education shall undertake a study of the feasibility of a one-year internship as the first year of teaching following completion of a teacher education program and shall report to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.

Early Childhood Education

16. Each school division should implement a full-day kindergarten program for all children.

17. The General Assembly shall expand the four-year-old at-risk preschool programs to cover all eligible students in all schools. Additional funds are required to serve 100 percent of eligible four-year-old students, including those currently served in Virginia public schools through local or

Title I funds.

18. The General Assembly shall appropriate sufficient funds to expand the K-3 class size initiative to bring schools with 50 to 69 percent Free Lunch participation from the current 18 students per teacher to 15 students per teacher in the 1998-2000 biennium, effective the first year to reflect the primary goal of K-3 programs of striving to ensure that 95 percent of all student groups are reading at grade level by the end of grade 3.

19. An incentive grant program to assist low-performing schools shall provide funds for implementing successful reading programs such as Reading Recovery and Success for All.

Remediation

20. School boards shall provide remediation programs held outside of normal school hours and students who fail to achieve a passing score on the Standards of Learning exam in grades 3, 5, and 8 shall be required to attendthem.

21. School boards shall provide summer school remediation for all elementary and middle school grades and for all high school academic courses.

22. The General Assembly should fund an Innovative Grant program recommended by the Joint Subcommittee Studying Remedial Summer School.

23. The Board of Education shall set minimum standards for remediation courses.

Safe Environment

24. School boards shall biennially review the model student conduct code to incorporate a continuum of discipline options and alternatives to preserve a safe, nondisruptive environment for effective teaching and learning.

25. The Board of Education shall develop guidelines in the recommended number of alternative settings per 1,000 middle and high school students and the average incremental cost thereof and shall report the guidelines and the fiscal resources necessary to implement them to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.

Technical Assistance

26. A research unit for the collection and dissemination of information regarding "best practices" shall be established within the Department of Education to serve as a resource for school divisions. Priority shall be placed on serving school divisions with less than a 70 percent pass rate on the Literacy Passport Tests and the Standards of Learning tests.

27. The Department of Education shall include in the Outcome Accountability Project report, made annually to the public on the progress of Virginia's schools in improving or failing to improve student learning performance, an analysis of the strengths and weaknesses of public education programs in the various school divisions in Virginia and shall make recommendations to the General Assembly for further enhancing student learning uniformly across the Commonwealth.

28. The Department of Education shall conduct technical assistance visits to low-performing school divisions on an established cycle. Schools accredited with a warning must be given priority

for technical assistance that begins with analysis of relevant school data and continues through the development and implementation of an improvement plan.

Educational Technology

29. The Department of Education in collaboration with the Center for Innovative Technology and other high technology companies in Virginia shall assess the technology needs of local school divisions and establish guidelines for connectivity, including school local area networks; architectural models, definitions for local versus shared services such as video bridges), and leveraged volume purchase agreements. The ultimate result should be that the Commonwealth is connected through a network infrastructure to support K-12 school initiatives for the 21st century, provide access for voice, data, and video telecommunications, and enhance the educational equality and experience for all Virginians, regardless of location in the Commonwealth. The Department shall report the results of the needs assessment and the guidelines to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.

30. Proficiency in educational technology shall be a condition of licensure for all teachers in Virginia's public schools, and the General Assembly shall provide grants for implementing the recommended technology infrastructure, hardware and software for teacher education programs in public institutions of higher education in the Commonwealth.

31. Staffing levels outlined in the Standards of Quality shall require the employment of at least one full-time educational technology expert per school division.

## III. Engaging Constituencies

Family and Community Involvement

32. Each school division shall establish a voice mail communication system after regular school hours for parents, families, and teachers by the year 2000.

33. The General Assembly shall provide two competitive grants per superintendents' region to schools and school divisions to plan, develop, promote, and expand meaningful family/community involvement programs designed to facilitate parents' creation of supportive learning environments at home and involvement in their children's learning at school and in school activities.

34. The Commonwealth shall require pre-service programs and fund the establishment of in-service programs for teachers, principals and administrators designed to strengthen educators' ability to communicate and work with families and help families become involved in their children's learning at home and at school.

35. The Department of Education shall gather and disseminate information and provide resources for implementing family/community programs, including information on potential private funding, support sources, and existing exemplary programs.

Business and Professional Involvement

36. To enhance on-going partnership efforts between schools and businesses, the Board of Education shall establish a new program of 16 pilot grants to provide incentives for partnerships between school divisions and local business and industry that focus on teaching higher level skills and the application of new knowledge.

37. Local school boards shall be required to establish local business advisory councils.

38. A state business advisory council shall be established to advise the Governor and the Board of Education regarding workforce and education issues.

## IV. Responsibilities, Accountability, and Consequences

39. The Commonwealth's accountability initiative shall include a system of state and local incentives or rewards for students.

40. Effective for the 2004-2005 school year, promotion of any student failing the 5th or 8th grade English or mathematics SOL examination shall be contingent upon the school's provision of and the student's participation in a structured remedial program. A second promotion after failing to pass one or both exams should be granted only in specific situations, such as for certain ESL students and students with disabilities, and the school shall advise the public and the Board of Education of the number of such exceptions granted.

41. A system of state and local recognition, including both incentives and consequences, shall be established for teachers and administrators.

42. Any school which experiences three or more years of provisional accreditation may be subject to being reconstituted by a directive of the division superintendent. The principal, teachers, or entire staff may be reassigned to other positions in the system.

43. A system of state and local incentives or rewards shall be created for schools demonstrating excellence or showing significant improvement toward clearly stated goals, including academic performance and family involvement.

44. School divisions with schools demonstrating a passing rate of less than 70 percent on all three Spring 1998 Literacy Passport Tests by students taking these tests for the first time shall develop a comprehensive corrective action plan with and for each school during 1998-99 for implementation no later than 1999-2000, including specific goals for improvement, and shall receive technical assistance from the Department of Education in implementing the plans. The affected schools shall be rewarded for achievement of their goals.

### Other

45. The Virginia Code Commission shall undertake a recodification of Title 22.1 5 to ensure clarity, uniformity, and consistency in Virginia's public education statutes.

# REPORT OF THE COMMISSION ON THE FUTURE OF PUBLIC EDUCATION (HJR 196)

## Legislative Charge and Process

The Virginia General Assembly created the Commission on the Future of Public Education in 1996, charging its members to:

- Develop a vision for public education that is consistent with the General Assembly's constitutional mission; and
- Map out a strategic plan for achieving this vision.

### Components of the plan

The strategic plan was to include:

- Innovations for implementing the revised Standards of Learning to enhance students' preparation for future learning and work;
- Teaching strategies and methodologies, and teacher pre-service and in-service preparation and training, with particular attention given to teacher training needed to assist students in applying concepts and transferring skills;
- Organizational patterns and management of public schools, the public school infrastructure, incentives and rewards to school divisions that successfully meet state requirements and whose students attain or maintain high academic achievement;
- Current and future workforce skills and knowledge needed by high school graduates in the workplace;
- Curriculum and instructional materials and educational technology needs;
- Student and teacher assessments, and school accountability;
- Correlation of the objectives of the revised Standards of Learning with the competencies needed for success in employment and postsecondary education;
- Business and industry linkages and partnerships;
- Collaborative initiatives with institutions of higher education for augmenting instruction and providing teacher training;
- Parental involvement, student learning styles, educational alternatives and choices of students for career preparation;
- Funding needed for public schools to meet the vision and mission of public education; and
- Communication and coordination with other legislative studies charged similarly to examine the needs of public education and educational technology.

We were also directed to examine other significant public education issues, such as the length of the school day and year, the establishment of vocational high schools, educational alternatives designed to improve students' career preparation and enhance educational choices, the feasibility of establishing an institute for industrial arts, and accountability for educational excellence.[1]

### Organizing Our Efforts

Seeking a full range of perspectives, we created two advisory task forces, representing business and local government, and parents and educators, respectively. Task force members joined Commission members to form four special subcommittees targeting the critical issues of:

[1] A copy of House Joint Resolution 196 (1996) is found in Appendix A.

- teaching and learning,
- support for teaching and learning,
- options for students, and
- consequences and accountability.

We held 14 full Commission meetings to hear presentations and deliberate the issues. In the fall of 1996, 600 parents, students, educators, business leaders, local elected officials, and other interested citizens shared their ideas at seven hearings throughout the Commonwealth. Subcommittee chairpersons presented their reports for consideration by the full Commission in July 1997, and a final round of four public hearings was held on the draft report in November 1997.[2]

## Building on Virginia's Legacy

The Commission on the Future of Public Education is the most recent milestone along Virginia's continuum toward excellent schools. Nearly a decade of noteworthy achievements has preceded the Commission's formation, including:

- Nationally respected academic standards in English, mathematics, science and history and social science;
- Newly developed assessments that are designed to measure academic progress, and most recently;
- New measures of accountability for schools; and
- More rigorous requirements for high school graduation.

[2] A list of meetings and hearings of the Commission appears in Appendix B.

## Vision and Mission

*If a nation expects to be ignorant and free, in a state of civilization, it expects what never was and never will be.*

–Thomas Jefferson

Nearly 200 years ago, Thomas Jefferson passionately championed public education. Now, the members of this Commission are looking toward the future of the Commonwealth. We have a vision for a new kind of school system in which each student reaches his or her highest potential.

Our vision is to help each student reach his or her highest potential. Our mission is to provide a plan to bring this vision to life. With this document, we call for a broad array of high-quality educational opportunities from which students can choose and in which they can excel.

We have gone to the people throughout the Commonwealth, enlisting them as full partners in our mission: parents, teachers, students, administrators, interested citizens, local governing officials, and taxpayers. Few major reform efforts succeed that do not have a broad positive consensus of the people. Their voices have been heard in our report.

Building on the Board of Education's work in standards, assessment, and accountability, we offer a plan to:

### Improve Student Learning

- Provide all students rigorous standards-based instruction, including the practical application of skills and knowledge, to prepare them for successful educational and work experiences after high school. History has shown that any reform effort that does not attempt to center on student learning has very little chance of success. Student learning is at the core of our strategic plan.

### Develop Capacity

- Build the capacity of the system to provide high-quality teaching and enhance student learning and achievement. Rigorous academic expectations, assessments and consequences are critical first steps in reforming Virginia's education system. But saying it doesn't make it so. The Commonwealth must provide tools, training, and technical support to teachers, principals, and other staff to realize academic excellence across the Commonwealth from Pennington Gap to Accomack, Fairfax to Halifax.

### Build Community-Wide Support

- Actively engage families and parents, community, business, professional and other constituencies in helping students learn—from kindergarten through life. Educators need the support of parents and the voluntary help of community and business leaders to create and sustain an environment of higher expectations. Schools cannot do the job alone, and we should not expect them to try to do so in isolation from their communities. Every person's contribution counts and is necessary.

### Strengthen Accountability

- Hold everyone in the education system accountable for improving student achievement and other important indicators of school success. In an accountable system, who holds what

responsibilities? Students and their families must attend to learning. Teachers must improve their instruction, and administrators must lead with vision and skill. Local school boards are responsible for the supervision of the schools themselves. Superintendents and principals oversee the implementation of policy and strategies in their local school division. School successes must be celebrated, and shortfalls remedied.

## Introduction: How We Got Here and Where We Stand

As an aftermath of the G.I. Bill, schools have struggled to define their mission. They have sorted "the best" and prepared them for college. The "rest" were provided a basic education primarily suited for unskilled or low-skilled employment. As the importance of technology grew and the global economy began to affect almost every business and small town in America, schools began to redefine their mission to provide much higher levels of knowledge and skills for all. That process is still evolving.

### Preparation for College

When the SAT was created in 1941, only 10,000 people took it. They were mostly white and male. Today over a million students in the United States take the test. In Virginia the percentage of high school seniors taking the SAT has grown from 51 percent in 1981-82 to 69 percent in 1996-97. Further, in 1982 the average combined math and verbal scores on the SAT was 997. In 1997, despite participation by greater numbers of students with a broader range of abilities, the average combined score was 1116.[3]

A higher percentage of U.S. citizens has post-secondary education than any of the major European countries, Japan and Australia.[4] This fact alone clearly constitutes a major success for our public schools which are sending more and more students to college than ever before.

However, we are still far short of where we would like to be and need to be.

Even though the number of college-bound students has increased substantially, the 1990 census reveals that about 20 percent of the American population 25 or older actually hold baccalaureate degrees.[5] Clearly up until now many of those graduating from high school have opted for the workplace rather than for an undergraduate degree. Our students—whether or not they opt for college—deserve an academically rigorous and top-quality high school program that opens doors to higher education or high-skill jobs.

### Preparation for Work

While Virginia ranks near the top (seventh) in the nation in the percentage of adults over the age of 25 with four years of college, it ranks near the bottom (38th) in the percentage of adults who have completed high school.[6]

This is an "embarrassing chasm" between the extremes of college attainment and lack of completion of high school, as Virginia Business Magazine terms the gap in educational achievement. It portends continuing difficulty for the future of our people, our schools and our economic circumstances in the Commonwealth unless we act to remedy it. This gap between the educational "haves" and "have nots" must be narrowed!

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3 The College Board, "1997 College Bound Senior SAT-I Program Highlights Reports, Virginia," *Annual Summary Report of College Board Programs and Services.*

4 National Center for Educational Statistics, "Education at a Glance: O[rganization for] E[conomic] C[ooperation] and D[evelopment] Indicators." April 1995, as quoted in "Laying the Foundation,"*Virginia Journal of Education* 91(October 1997)1:17.

5 As quoted in Dale Parnell, "Cerebral Context," *Vocational Education Journal* (March 1996), p. 21.

6 The Corporation for Enterprise Development, *The 1996 Development Report Card,* 1996, p. 129.

To narrow it, we need to understand why the chasm exists and how it occurred. Historically, many of our students have chosen not to finish high school. Some decided to opt out because they did not like school; others saw no relevance between what was going on in the classroom and life in the outside world. Others saw no success for themselves in school. Many needed or wanted to work.

Did we let these students down? Our expectations for these other students were far lower than they deserved, although the economy offered a wider range of opportunities until recently. From the 1950s through the 1980s, many non-college-bound students could participate in the American Dream, providing a decent living for themselves and their families. Jobs paying good wages for unskilled work were available.

No longer is this true. In the past 15 years we have experienced a revolution in information technology and communication. Ours is a global economy in which capital, technology, and production equipment move freely to the country and locality that offer the most efficient means of production. In some cases, American and foreign companies base their location decisions on where they can find a skilled workforce.

## New Technologies, New Demands

Northern Virginia is a prime example. Sixteen hundred high tech companies do business around the Beltway in Fairfax and other Northern Virginia localities. Even though the population here is highly educated, these "information age" companies are scrambling to find skilled workers for some 19,000 jobs currently going unfilled. And these are jobs that pay an average of about $40,000 per year.[7] The demand is greater than the current supply.

Why is this? These and other employers say that the competencies needed for better-paying, entry-level positions are more advanced than the knowledge and skills young people are learning in school. For example, today's front line workers need to be able to read technical material, communicate clearly, calculate percentages, graph information, and work efficiently with team members. They also must be able to use, manage and understand technology on a daily basis.

Our system of schooling, like the workers it was trained to develop, is still largely based on the outmoded factory model of the 1940s and 1950s. The old process involved rote memorization and performance of simple tasks, not the identification of problems, issues, or values or the ability to solve problems, conceptualize, make linkages, or evaluate. Simply put, too many of our students leave school unable to apply what they have learned to real-world problems. Further, many are technologically illiterate. This will no longer suffice.

While the jobs continue to go unfilled, our student rankings on international tests lag far behind students of competing nations. The Third International Mathematics and Science Study report of 1996 revealed that our eighth-grade students scored far behind students of top-ranked nations like Singapore, Korea, and Japan on math and science tests of the highest levels of content and application of knowledge.[8]

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[7] Ryan, McGinn, Samples Research, Inc., *The Survey on High-Tech Workforce Issues in Northern Virginia,* (Northern Virginia: Virginia Center for Innovative Technology and Northern Virginia Technology Council, 1997), p. 3; Paul Bradley, "Technology's 'tidal wave,' net surfing feeds swell of new job opportunities," *Richmond Times-Dispatch* (Monday, September 15, 1997).

[8] U.S. Department of Education, National Center for Educational Statistics, *Pursuing Excellence*, NCES 97-198, (Washington, D.C.: U.S. Government Printing Office, 1996), pp. 20, 21.

## A Call to Action

The time has come for our public schools to meet the new challenge of today's society. The mission of our public schools must expand.

The State Board of Education has greatly raised the level of expectation for all students in our public schools by strengthening the Standards of Learning and adopting Standards of Accreditation designed to hold schools and students accountable for teaching and learning. Their efforts in this endeavor are applauded, although there is understandable apprehension associated with the new, higher stakes linked to student achievement. Raising standards and holding schools and students accountable are absolutely essential and goals much to be desired. A high level of academic content is critical for all students and must be maintained.

As critical as these actions and goals are, they are inadequate. More is needed. To raise the bar to another level in liberal arts and to require all students to jump over it without adequate preparation, time, coaching, training, and resources may be a prescription for failure for too many of our children.[9] Public education cannot expand to meet the challenges of today's society or those of the future by a contraction of state fiscal responsibility. Picking up a larger share of those costs creates a greater strain than many of the poorer localities can bear.

In addition, schools need to offer students options for a number of career possibilities. After all, pursuing a baccalaureate degree and preparing for certain professions make for sound post-secondary strategies for *some* high school graduates, but this path is not realistic, practical, or even desirable for all students.

### Engaging All Learners

Part of the problem is that we too often teach all students in a traditional manner where the teacher lectures and the students take notes and then reproduce on a test what they copied. What we know about the brain and learning suggests that this approach may be the least effective teaching strategy for many students. It is mastered early by approximately one-third of the students with an aptitude for academic study. These students excel as the content becomes more abstract and more detached from context. The remaining two-thirds of students learn best when instruction is put into a relevant, "real world" context, where one moves from the concrete to the abstract. These issues are especially important for those students with disabilities.

Often our teachers are not prepared to teach students how to use the content knowledge being taught. According to a 1996 survey conducted by High Schools That Work, 30 percent of the 22,875 vocational and non-vocational high school teachers surveyed spend two hours or less a week asking students to address a project, problem, or issue that is similar to one they have

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9 The performance of students on recent tests in Texas and Colorado raises concerns about adequate preparation for state assessments. On the Algebra I end-of-course exam in Texas, 28 percent passed in spring 1996, 17 percent passed in fall 1996, and 35 percent passed in spring 1997. New curriculum standards in Algebra will be implemented in classrooms in the fall of 1998, and staff development training for Algebra I has been stepped up. (Texas Education Agency press releases of March 27, 1997, and August 1, 1997.)

In Colorado this fall when just 31 percent of 4th graders performed at the proficient or advanced level in writing, officials reported, "We're happy to announce the worse test results in the history of the state. Unless you get bad results, it is highly doubtful you have done anything useful with your tests." New model curriculum standards and tougher assessments have been recently adopted, and for the first time virtually every 4th grade student in the state was tested. (Mark Walsh, "Colorado Officials Couldn't Be Happier With Low Scores," *Education Week*, November 26, 1997.)

encountered or are likely to encounter in the workplace. Over 50 percent of these high school teachers reported they needed staff development to improve their efforts to teach higher level academics to high school students not enrolled in the college preparatory curriculum. Their areas of need were in establishing a classroom environment which actively involves students in the learning process and teaching mathematics, reading, writing, speaking, and science in an applied or occupational context.[10] If the curriculum is to be instructively effective for every student, our teachers need to be given the help for which they are asking.

## Commonwealth at the Crossroads

We on the Commission have concluded that the wisest course is to continue to broaden the mission of public education, to provide as many high-level, academically rigorous options for students that we can afford and that the best research tells us will succeed. We must change our teaching methods and strategies to align teaching more closely to the way students learn. We must elevate vocational and technical education and the fine arts to the same level we have given to liberal arts. And we must ensure that we are assessing how well students can apply what they have learned. We believe these are the essential steps to securing the future of the Commonwealth and its citizens.

The Commonwealth of Virginia is at the crossroads of its future. Looking at the next 10 years, we have an exceptional opportunity to take the roadway to excellence. If it is a roadway to the mediocre with which we are satisfied, then it is mediocrity we shall achieve. On the other hand, if it is the road to excellence we pursue, then it is excellence we shall approach. The option and the opportunity are ours. If we choose to provide each child adequate preparation, time, coaching, training, and resources, then excellence in our schools may prevail. Here, then, is our blueprint for educational excellence in Virginia's public schools.[11]

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[10] Southern Regional Education Board, *Selected Composite Results of the SREB High Schools That Work 1996 Secondary School Teacher Survey* (Atlanta: Author, 1997), pp. 17, 22.

[11] Cost estimates for Commission recommendations are found in Appendix D. Appendix I contains a prioritized list of all 45 recommendations.

# I. Rigorous Instruction for Collegiate and Workforce Preparedness

Virtually all students should expect to enter the world of work, whether immediately upon completion of high school or following some postsecondary education. Business and industry have called for employees who are proficient in communication and technical reading and who are able to apply their knowledge daily to changing problems and situations. College and university faculty members and administrators have decried the lack of preparation of students for higher order thinking and clarity in writing and expressing their ideas.

It is essential, then, that instruction focus not only on rich academic content, but also on the application of knowledge and skills that will effectively enable students to reach higher cognitive levels of learning, solve problems, and understand concepts for higher levels of learning and success in the world of work.

Expectations, however, should be realistic for those students with disabilities. Students with learning problems comprise a high percentage of school dropouts and frequently commence into the corrections system. Success in the workforce must be as possible for challenged students as it is for those who are able to master "high academic content."

Our high standards and new assessments must incorporate the application of learning, building upon high academic content with the ability to solve real world problems. Increased focus on application—and relevance—will both engage the interest of students and more effectively and better equip them with the skills needed for successful entrance into higher education and into the 21st century global marketplace.

## Application of Knowledge

**1. The Standards of Learning in all subject areas shall be subject to regular review and revision to (1) maintain rigor in all subject areas and (2) reflect a balance between content knowledge and the application of knowledge in preparation for eventual employment and lifelong learning.**

Studies indicate that the American curriculum has traditionally stressed retention of knowledge over its relevance and or application, and consequently our students do not compare favorably with their foreign counterparts in the application of that knowledge.[12]

To remedy this situation and ensure that all students receive a well-rounded education, we

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12 Willard Daggett comments in *Defining Excellence for American Schools:* "The implication of this information should be obvious. America needs to make a critical decision about what it means to be educated. Are we concerned simply with students moving up on Bloom's Taxonomy to higher and higher levels of knowledge in a subject, or should we also be concerned with their ability to apply the knowledge they have learned? The figures clearly show that American students are far behind in their ability to apply the information that they learn.

"...As to which nation has the highest standards in the industrialized world, that is subject to interpretation. If we define standards by content knowledge that can be measured on knowledge-based, short-answer tests, the United States stands at the top of the list. If, on the other hand, we believe the ability to apply that knowledge beyond the classroom demonstrates the highest functioning, then America is at the bottom of the list." (Schenectady, NY: International Center for Leadership in Education, Inc., 1994), pp. 43-44.

For a discussion of why students should be able to apply what they know and how to teach the application of knowledge, see Appendix C, Teaching and Learning subcommittee report.

must incorporate applied algebra and geometry, statistics, logic, probability, and measurement into our current focus on theoretical mathematical principles. Likewise, we must integrate applied chemistry, biology, and physics into our theoretical sciences and the ability to read and understand technical manuals as well as literature in our English courses. Students should also develop the skills necessary for success in school and preparation for life, including responsible citizenship by understanding and applying the lessons of history.

While the Standards of Quality currently require the Standards of Learning to develop students' critical reasoning, problem-solving, and decision-making skills, the Standards of Learning need to be reviewed on a regular cycle to ensure that they give adequate attention to the ability to apply such skills and knowledge in preparation for eventual employment and lifelong learning. This review and revision process must involve educators, subject matter experts, and representatives of business and the community at large.

The Commonwealth's Standards of Learning in the core subjects of mathematics, English, science, and history and social science, revised in 1995, have been recognized for their rigor and clarity. Last revised in the late 1980s, the Standards of Learning in subjects such as foreign language, music, art, and other areas must also reflect the same rigor. The Board of Education shall initiate a systematic process for reviewing and revising these Standards to achieve a balance in the acquisition and application of knowledge and to ensure that all students have a full range of high quality, rigorous options in these areas to meet their aspirations and needs.

**2. The Board of Education shall establish Standards of Learning for an articulated technological studies program in grades K-12.**

In an ever-changing global economy dominated by high productivity, increasingly complex technology, and intense domestic and foreign competition, it is imperative that our schools provide the educational opportunities that will equip all students for lifelong learning and the world of work. Competing in this world marketplace demands skilled, educated workers who are capable of applying knowledge and adapting to new and changing technologies.

While the Standards of Learning in the four core subjects for grades five and eight currently acknowledge that computer and technology skills are "essential components of every student's education" and that "the teaching of these skills should be the shared responsibility of teachers of all disciplines," it is imperative that technology skills be incorporated in the Standards of Learning at every grade level. We must establish an articulated program of technological studies to enable students throughout their learning experience to understand the pervasiveness of technology in our lives and why the application and use of technological knowledge is so important.[13]

The Board of Education has the option of developing stand-alone Standards of Learning for technological literacy or integrating new standards into existing SOLs in English, mathematics, science, or social studies. As a result of implementing this recommendation, students will learn information about and gain experience using a wide variety of technological inventions and innovations created throughout history.

**3. Assessments of student performance shall evaluate critical thinking and the application of knowledge and skills, and the Department of Education, with the assistance of independent nationally-recognized testing experts, shall be responsible for conducting an on-going analysis and validation process for these assessments. The first report of this analysis shall be made to the House**

[13] See Appendix F for a brief discussion on technological studies.

**Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.**

A necessary corollary to curriculum standards that reflect content retention and application is a system of assessments specifically designed to evaluate those skills.[14] The Commonwealth's assessments in the four core subject areas should reflect these values. To address any misunderstanding that tests that are machine-scored, by their nature, stress the ability to learn facts and not how to apply them, an on-going analysis and validation process will help ensure that the assessments are measuring the content for which they are designed and revised as necessary to provide the appropriate balance of performance tasks, such as essay writing and problem solving. State educational and professional organizations must participate in this review and revision process.

Participation of students with disabilities in these assessments should be governed by their respective Individualized Education Program (IEP) and Section 504 committees. For the student with a disability who does not participate, the idea of retention and application are also very important. An alternative assessment program must be developed for them so that they can benefit from an accountability program tailored to meet their needs.

**4. New Standards of Learning for vocational education shall require the full integration of English, mathematics, science, and social studies SOLs and incorporate a process for assessments, reporting, and consequences. All occupational vocational programs shall be aligned with industry and professional standard certification by the year 2002.**

Because preparing students for work is so critical, curriculum standards for vocational education must reflect the same rigor as those in the core subject areas.[15] Placement of students with disabilities in vocational education should be encouraged and success facilitated by ensuring that teachers have proficiency in special education instruction or have assistance from accredited special education teachers. Vocational-career education must fully integrate academic subjects and must reinforce students' understanding of the core subject Standards of Learning.

The Standards of Learning for vocational education should include hands-on assessments, perhaps using an existing licensing examination or other accepted trade examination from an outside source. Student performance on these assessments should be reported and appropriate consequences imposed for student failure to achieve or school failure in preparation.

**5. The requirements for a standard high school diploma shall include a concentration of courses selected from a variety of options. This concentration shall be planned to ensure the completion of a "focused career preparation" sequence in career, technical, or arts education developed by the respective school divisions consistent with Board of Education guidelines and approved by the local school board and the Board of Education.**

A concentration of courses can be designed to provide students with a collection of related skills that will potentially equip them for employment for a specific vocation or trade upon

[14] For futher information see Appendix C, Teaching and Learning subcommittee report. See Appendix E, Notes on State Assessment Issues, for a discussion of such issues as test item format, international assessments, test development time period, setting cut scores, consequences, and legal challenges.

[15] See Appendix C, Options for Students subcommittee report, for further discussion of the vocational curriculum and the Standards of Learning.

graduation as well as qualify them for entry into an associate or baccalaureate degree program.

Under the new Standards of Accreditation, standard diploma students need 22 (out of a theoretical 24) credits to graduate. Thirteen of these are in the core academic disciplines, two are physical education and seven are electives (one of which must be a fine arts or practical arts course). The Commission's proposal would require the Board of Education to set guidelines for school boards to assist students in focusing their electives so that when they graduate they are prepared to enter the workforce with a marketable skill. Such electives need not and should not eliminate the opportunity to sample other disciplines, but a student who is not preparing for college should develop a sense of accomplishment by being able to obtain a job. This will assist, not hinder, the student who decides after high school to pursue some other career objective, either on the job or in a community college program. The vo-tech courses in which a student concentrates would have high standards comparable to the academic Standards of Learning (see Recommendation #4).

**6. The requirements for a high school diploma shall include one credit in fine arts.**

Instruction in the fine arts—whether music, art, drama, or other disciplines—is an invaluable component in every student's educational development. Students who takes arts courses in high school, for example, out-perform students who don't on the Scholastic Aptitude Test (SAT) according to the College Entrance Examination Board. "In 1995, SAT scores for students who studied the arts for four years scored 59 points higher on the Verbal portion and 44 points higher on the Mathematics portion than students with no arts coursework."[16] Achievement test scores in academic subjects improve when the arts are used to assist learning in mathematics, creative writing, and communication skills.[17]

The Standards of Quality require school boards to provide an emphasis on fine arts within the program of instruction for grades K-12. Amending the Standards of Accreditation to require completion of a course in a fine arts discipline will help ensure that all students have the opportunity to grow intellectually and creatively through exploration of and participation in the arts.

**7. The Department of Education shall study the feasibility of various methods and tools designed to focus students' attention on future education and career plans and shall report to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.**

The Standards of Quality currently direct school boards to infuse career education programs throughout the PK-12 curricula. Further study of the wide range of methods and tools available in Virginia and other states addressing career planning is necessary to determine those programs that may best assist Virginia students in translating their interests into career or educational paths.

**8. The General Assembly should consider legislation which permits, as a local option, the formation of a limited number of carefully monitored charter schools within the state's public school system. These schools must admit eligible student applicants based on a lottery system to ensure fairness in attendance**

16 Bruce O. Boston, "Educating for the Workplace Through the Arts," *Business Week* (October 28, 1996) p. 8 [hereafter referred to as Boston].

17 John Brademas, Remarks, American Council on the Arts Conference on "Arts Education for the 21st Century American Economy," Louisville, KY, September 16, 1994 as quoted in Boston, *supra* note 8 at 5.

**policies, and they must comply with all federal and state anti-discrimination laws, regulations, and court orders. They will not be exempt from the Standards of Quality, Standards of Accreditation, or Standards of Learning. Teachers in charter schools must be licensed to teach.**

Children learn in different ways, and, as a result of different learning environments, some students perform at higher levels. Because charter schools are exempt from many education regulations, they may be able to embrace more innovative learning strategies that may improve student performance. To promote more options for students in the PK-12 classroom, school boards should be able to consider allowing innovative school organizations under a state charter school law. These organizations must enhance community and parental involvement.

The specific provisions of a charter school bill deserve debate for consideration in the 1998 Session of the General Assembly, based on the report of the Joint Subcommittee Studying Charter Schools Pursuant to HJR 551 and SJR 334 (House Document No. 43, 1996); legislation previously submitted to the General Assembly for its consideration; and the ongoing work of the special subcommittee on charter schools of the Senate Committee on Education and Health.

## II. Increasing Capacity

Schools are expected to meet the educational needs of people in a fast-changing world and a global economy. Even the best schools in the Commonwealth must become even better. Virginia appropriately raised academic standards, revised assessments, and instituted various consequences for student performance. But imposing higher standards and tougher consequences is inherently self-defeating if students, educators, and schools are not given the tools necessary to achieve educational excellence. Essential to higher educational expectations is a renewed commitment to our public schools to increase the capacity of each school division to serve every student.

We must provide far greater time and attention to the mastery of a full range of teaching styles, strategies, and methodologies. If we want all children to learn at high levels, then those who learn more slowly or differently will need more time and attention. Remediation and additional instruction must be designed to meet increased standards and to accommodate different learning styles.

Schools must provide a safe and orderly environment as well as the technology, laboratories, and modern facilities in which students and teachers can concentrate on the important work at hand. Although we make no specific recommendations regarding school construction and facility repair, we acknowledge the work of the HJR 135 Commission on Educational Infrastructure and recognize that adequate school facilities are also an integral part of increasing capacity.

### Professional Development

We must build the capacity of the system to provide high quality teaching and enhance student learning. To that end, we recommend the development of the highest quality continuum of teacher development—a state program that begins with rigorous accreditation standards for all schools of education within the Commonwealth and includes teaching scholarship loans to encourage minorities and men to enter teaching, requirements for induction and mentoring systems for beginning teachers, study of a year-long internship for prospective teachers, and on-going professional development related to state, local and school needs.

**9. Effective after June 2001, graduates of Virginia institutions of higher education will be licensed as teachers only if the endorsement areas offered at such institutions have been assessed by a national accrediting agency or by an enhanced state approval process with final accreditation by the Board of Education.**

Addressing teacher preparation and training as well as qualifications for instructional positions, Virginia's teacher licensure standards are designed to maintain standards of professional competence. Currently, licensure as a teacher in Virginia may be obtained through completion of a state-approved teacher preparation program or through reciprocity with another state.

Currently, 14 of Virginia's 37 colleges and universities preparing teachers are accredited by the National Council for the Accreditation of Teacher Education (NCATE), the nationally recognized accrediting body. While the remaining 23 institutions are "accredited," they have not been subject to an on-site peer review process since at least 1988. Prior to that the non-NCATE reviewed institutions were subject to regular visits under a Department of Education (DOE) managed process. Some years ago the General Assembly reduced DOE funding to the point that such accreditation visits were eliminated. As a result, 23 of the 37 teacher training institutions have not had an in-depth accreditation visit in a decade.

We recommend that the General Assembly fund, and the Board of Education implement, a rigorous and regular state teacher education accreditation process. It should include training for evaluation teams comparable to the NCATE training program and a team membership requirement that ensures at least a one-third representation by persons residing outside the Commonwealth. We cannot afford teacher training programs that are not regularly reviewed and found to meet high standards.

**10. To encourage talented students, particularly minorities and men, into teaching in shortage areas, the Teaching Scholarship Loan program shall be expanded by providing 200 scholarships per year to eligible candidates.**

From 1984 to 1989 Virginia offered $2,000 scholarships to recruit talented students and alleviate teacher shortages. The program provided financial assistance to full-time students at the junior year or beyond who had attained a grade point average of 2.7 or better and who were enrolled in a state-approved teacher preparation program in a shortage area. The loans could be forgiven with full-time teaching in the public schools of Virginia.

In 1991, budget constraints reduced funding and the program was discontinued. In 1996 the General Assembly reinstated the program, providing 100 scholarships in the amount of $3,000 each. This program must be maintained and expanded.

**11. Clinical faculty and mentor teacher programs shall receive increased state support.**

Teaching, like many professions, requires hands-on experience to succeed. New and student teachers, like doctors, require a mentor to convert academic knowledge to classroom competence. Supervision by a specially trained licensed school teacher can prove invaluable to a student teacher. Similarly, ongoing support from an experienced teaching colleague can help a new teacher make the initial classroom teaching experience a successful one. Two current initiatives, the clinical faculty program and the mentor teacher program, are designed to enhance training for new and student teachers. Teachers serving in clinical faculty programs become adjunct faculty, responsible for supervising, grading, and evaluating student teachers in participating colleges and universities, while mentor teachers provide guidance and orientation for new teachers. In recent years, the clinical faculty program received no state funding; however, the 1997-98 budget included $75,000.

Mentor teacher programs, currently implemented by school divisions on a voluntary basis, received $150,000 in each year of the 1996-98 biennium. Increased, stable funding is necessary to ensure the continued success of these training initiatives. We call for a mentor teacher plan to assist newly hired beginning teachers by developing a cadre of experienced teachers selected and trained to serve as mentors to their beginning colleagues. Approximately 4,000 beginning teachers are hired to work in school divisions each year. Over a four-year period 4,000 experienced teachers will be trained, 1,000 per year. By the end of the fourth year an adequate number of mentor teachers will have been trained for each beginning teacher to have a mentor assigned for one-to-one support and assistance. Following the fourth year the need for newly trained mentors will be significantly reduced. The estimated cost for this four-year program in the first year is $800,000.

**12. The Department of Education shall provide and teachers shall participate in intensive training to prepare those teachers who teach the revised English, mathematics, science, and social studies Standards of Learning in instructional**

**methods that recognize different learning styles and teach children how to apply knowledge.**

**This training shall include a one-time intensive three-week training program of professional development over a four-year period that focuses not only on the four core SOLs, but also on (1) teaching strategies and methodologies that emphasize application of knowledge, linking assessment with instruction, (2) the use of educational technology for instruction, (3) working with parents and (4) technological studies.**

The highest quality instruction is necessary to lead students through the revised curriculum established by the Standards of Learning. New as well as experienced teachers must receive instructional training concerning these standards, with particular emphasis in mathematics, science, and computer technology. In addition, this training must be tailored to assist teachers in providing instruction that challenges students to understand and apply knowledge acquired in the content-rich Standards. Finally, instructional training must prepare teachers to recognize and accommodate different learning styles and assist them in working effectively with parents and families.[18]

In all eight superintendents' regions master teachers in the four core SOLs will be identified and trained to serve as leaders for summer workshops and training sessions during the school year. Master teachers will receive a week-long institute to set up the training and agree on strategies, materials, and curriculum to be used in the training, to ensure consistency on a statewide basis.

Training sessions will be held regionally on a commuting basis, or through Net.Work.Virginia where and when available on a local basis, in any case not necessitating lodging expenses. Teachers will receive two weeks of training the first year and one week the following year. One-third of the teaching force will be trained over a two-year period, with all new and currently employed teachers receiving training within four years.

**13. A program of lead teachers in mathematics, science, technological studies, English, and social studies shall be established and maintained to provide support for elementary and secondary school teachers. The program shall be phased in over a ten-year period, beginning in 1999-2003 with mathematics and science lead teachers in elementary and middle schools and phasing in English, social studies, and technological studies lead teachers in 2004-2008 in elementary, middle and high schools.**

The increased rigor of the Standards of Learning challenges teachers to revisit their mastery of these subjects and to employ instructional methods that promote the application of content in these subjects. Sharing of expertise is necessary to prepare all teachers to address the changes prompted by these Standards. More experienced or designated "lead" teachers must assist their colleagues at the elementary, middle, and high school levels in accessing training and research, conducting laboratory experiments, and obtaining other instructional support. The Commission recommends that lead teachers receive an annual stipend of $1,500 each from the Commonwealth.

Over a ten-year period Virginia will develop a cadre of lead teachers in mathematics, science, technological studies, English and social studies for every school. These lead teachers will receive training in summer institutes. The state will develop teacher qualification standards, a syllabus and materials for the summer institutes. Each lead teacher will have released time equal to

[18] For a discussion of the issues related to teaching the application of knowledge, see Appendix C, Teaching and Learning Subcommittee report, pp. 5-7.

one period for lead teacher activities to help prepare and support teachers in their schools to teach science and mathematics in the SOLs. To phase in the program, lead teachers in mathematics, and science for elementary and secondary schools will be identified and trained during the first five years of implementation of this recommendation.

**14. The Board of Education shall establish leadership standards for superintendents and administrators and shall provide leadership training programs that superintendents and administrators are required to successfully complete as a condition of licensure.**

School administrators provide critical leadership in implementing change and maintaining excellence in our public schools. Effective leadership at the building level is necessary to ensure that our schools are continually improving and that instruction is of the highest quality. Professional development programs to help principals implement the Standards are paramount to the success of Virginia's ambitious educational objectives.

We call on the State Board of Education and the State Council of Higher Education in Virginia (1) to develop collaboratively leadership programs that encourage interaction and exchange of methods between business and education and (2) to establish uniform standards for these programs, assuring high quality programs across the Commonwealth.

Funding for planning and program development should be included in the base budget of DOE. Such programs should include, but not be limited to, executive leadership seminars and graduate degree programs. Administrators should be provided leadership training programs that focus on shared decision making, teaming, mediation, communicating with customers, marketing successes and adapting to change.

**15. The Department of Education in collaboration with professional organizations involved in teacher education shall undertake a study of the feasibility of a one-year internship as the first year of teaching following completion of a teacher education program and shall report to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.**

Recent studies show that graduates of extended teacher education programs are rated by principals and teaching colleagues as much better prepared and more effective than graduates of four-year programs, and they are as confident and effective in their teaching as more senior colleagues, according to the National Commission on Teaching and America's Future.[19]

These internship programs permit students to devote their energies exclusively to teacher preparation for at least a year at the graduate level and allow for extended practice teaching in schools tightly tied to relevant course work.

## Early Childhood Education

**16. Each school division should implement a full-day kindergarten program for all children.**

The value of positive early learning experiences has long been recognized in the

[19] National Commission on Teaching and America's Future, *What Matters Most: Teaching for America's Future* (New York: Author, 1996), p 78.

Commonwealth, as schools are required to provide kindergarten programs that emphasize developmentally appropriate learning. There are no requirements for the length of the kindergarten day.

Recognizing that there are different readiness and maturity levels in kindergarten-aged children, it is imperative that more time be devoted to ensuring an opportunity for a high quality program. Currently, 18 school divisions conduct kindergarten programs on less than a full-day basis. In these school divisions any four-year-old at-risk students who have participated in full-day preschool state-funded programs now must attend kindergarten on a half-day basis.

The major expenses for this program will be the capital outlay for construction of twice as many kindergarten classrooms and additional staff. To phase in the program, funding shall begin with those school divisions having less than a 60 percent pass rate on all three parts of the Literacy Passport Test.

**17. The General Assembly shall expand the four-year-old at-risk preschool programs to cover all eligible students in all schools. Additional funds are required to serve 100 percent of eligible four-year-old students, including those currently served in Virginia public schools through local or Title I funds.**

Success in early years is a critical prerequisite to success in later schooling and, ultimately, in life, according to early childhood researchers. Researchers also point out that no matter how educators and administrators try to curb the dropout rate of students and no matter how many dropout programs are available, the best solution to both student alienation (a major factor in students dropping out) and students' learning deficiencies is early intervention. Preschool programs begin the work of early intervention so critical for at-risk children's success in school.[20]

Currently, the four-year-old at-risk preschool program provides services to 60 percent of eligible children not served by comprehensive preschool programs. Additional funds are required to serve 100 percent of eligible students in the 1998-2000 biennium, effective in the first year.

**18. The General Assembly shall appropriate sufficient funds to expand the K-3 class size initiative to bring schools with 50 to 69 percent Free Lunch participation from the current 18 students per teacher to 15 students per teacher in the 1998-2000 biennium, effective the first year, to reflect the primary goal of K-3 programs of striving to ensure that 95 percent of all student groups are reading at grade level by the end of grade 3.**

**19. An incentive grant program to assist low-performing schools shall provide funds for implementing successful reading programs such as Reading Recovery and Success for All.**

A noted early childhood researcher has said, "Reading failure is a curable disease. We

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[20] R. Morris, ed., *Solving the Problems of Youth At-Risk: Involving Parents and Community Resources* (Lancaster: Technomic Publishing Co., Inc., 1992), p. xv, as quoted in Thomas J. Hanisch, *Preschool and Elementary Programs for At-Risk Students: Effective Practices, Costs, and Funding* (unpublished dissertation at the University of Virginia, August 1996), p. 3.

already know enough to make widespread reading failure a thing of the past."[21] A goal of 95 percent of all students reading on grade level by grade 3 is essential to our overall goal of reaching higher achievement by all Virginia's children.

Established in 1994, Reading Recovery is designed to reduce illiteracy, promote reading and independent learning skills, and better equip teachers to provide reading instruction in the elementary schools. Studies indicate that the Reading Recovery program has dramatically reduced student retention rates at an 80-86 percent success rate, and results have been shown to have been maintained through third grade.

In 1997-98, $6.2 million was appropriated specifically for reading remediation programs in the primary grades. In addition, the Reading Recovery program received a specific appropriation of $141,581 to provide program planning and development support for other local school divisions. Fifteen school divisions operated Reading Recovery programs in 1997. Additional funding is needed to support intensive teacher training, personnel, and to provide facility space needed for this valuable initiative.

Initiated in 1995, the reduced K-3 class size initiative has reduced class size to 20 students per teacher in schools with 20 to 49 percent Free Lunch participation; 18 students per teacher in schools with 50 percent or more Free Lunch participation; and 15 students per teacher in schools with 70 percent or more percent Free Lunch participation.

## Remediation

**20. School boards shall provide remediation programs held outside of normal school hours and students who fail to achieve a passing score on the Standards of Learning exam in grades 3, 5, and 8 shall be required to attend them.**

**21. School boards shall provide summer school remediation for all elementary and middle school grades and for all high school academic courses.**

**22. The General Assembly should fund an Innovative Grant program recommended by the Joint Subcommittee Studying Remedial Summer School.**

If we are to achieve the goal of all children learning at high levels, we need to provide funds to give incentives and support for local innovations to accommodate those students who learn at different rates or in different ways. Early remediation should begin at grade 3, and remediation should be offered during and after school hours. Additional learning time outside the school's daily schedule and annual calendar will be necessary for some students to achieve academic success.

An innovative program that extended the school year and provided students with regular "intersessions" for remedial assistance or enrichment at one elementary school in Danville in 1996-97 resulted in improved reading performance of students to the point that 91percent of second-graders and 94 percent of third-graders were reading on grade level at the end of the year—early

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[21] Robert Slavin, *Hearing on Innovative Approaches for Teaching Disadvantaged Students* (Subcommittee on Elementary, Secondary, and Vocational Education of the Committee on Education and Labor, U.S. House of Representatives, 102nd Congress, 2nd Session, Washington, D.C.: Government Printing Office, August, 1992), p. 24.

but promising indicators of success.[22]

Another program implemented in Patrick County resulted in very high percentages of students passing the Literacy Passport Tests. The program focused on tutoring Patrick County elementary students in need of an extra reading, math or writing boost.

The Joint Subcommittee Studying Remedial Summer School (HJR 84-1996) found that waiting until summer for remediation is often too late to help students master essential concepts, and that the program is not necessarily designed for individual students' needs. Early intervention is universally recommended as the best approach, beginning in grades K-3 and starting as soon as the student shows a need for help. The subcommittee recommended creation of an Innovative Grant Program to pilot new remedial program ideas, but the program was not funded.

The Standards of Quality now require school divisions to "develop and implement programs of prevention, intervention, and remediation" for students whose scores are in the bottom quartile on the Virginia State Assessment Program tests or who do not pass the LPT; state funding is to be provided to support certain full-time equivalent instructional positions for remedial programs. In 1997-98, a state appropriation of $11 million supported remedial summer school. Remediation during the school year is also cited in the SOQ; $32.9 million in state funding is earmarked for this initiative in 1998. These funds should be directed at on-going remediation and intervention initiatives and should target schools with large at-risk populations.

**23. The Board of Education shall set minimum standards for remediation courses.**

As evidenced by the work of the Joint Subcommittee Studying Remedial Summer School (HJR 84-1996), simply requiring a student to repeat in summer school or in another remediation program covering the same material and taught the same way as in regular classes, may not be effective. Children have different learning styles. The subcommittee found that the state has not taken an aggressive role in summer school oversight and many local divisions do only perfunctory assessment of summer school effectiveness.

There are innovative approaches to remediation that merit replication and good ideas that can be piloted, e.g., regional cooperation, association with higher education, circuit rider teachers in rural areas, greater use of educational technology, new curriculum, and different instructional strategies for different learning styles.

The Board and the Department of Education need to study what works best and incorporate that research in new standards for remedial programs. Among the remedial successes in Virginia are the Danville "intersessions" and the Patrick County programs to raise scores on the Literacy Passport Test.

## Safe Environment

**24. School boards shall biennially review the model student conduct code to incorporate a continuum of discipline options and alternatives to preserve a safe, nondisruptive environment for effective teaching and learning.**

Because effective learning can only occur in an educational environment free from

[22] For an executive summary of first year results of the year-round program at Schoolfield Elementary in Danville See Appendix J.

disruption and violence, pupil discipline becomes a critical aspect of increasing capacity. While many existing initiatives promote a safe educational environment conducive to learning, increased efforts to involve parents, families, and communities in the development and revision of student conduct codes are necessary to enhance a sense of shared responsibility and accountability for pupil discipline.[23]

As a starting point, each school shall develop an annual plan that involves parents, families, and educators in dealing with disruptive and disrespectful students. The plan should clearly identify parental responsibilities and rights and should be communicated to parents. Second, guidance and peer counseling, supervised "time out" rooms, and the use of attendance officers in schools with a high incidence of serious student conduct problems must also be included in this continuum. Third, school divisions shall provide alternative environments for children who are disruptive or whose learning levels are so far above or below the norm as to be a serious impediment to learning for the rest of the class.

Finally, another component of this continuum should be character education programs emphasizing values such as honesty, self-discipline, hard work, respect for the rights of others, and pride in self, family, community, and country. Such programs are consistent with the SOQ directive that the Standards of Learning include the "development of personal qualities such as self-esteem, sociability, self-management, integrity, and honesty."

**25. The Board of Education shall develop guidelines in the recommended number of alternative settings per 1,000 middle and high school students and the average incremental cost thereof and shall report the guidelines and the fiscal resources necessary to implement them to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.**

School boards must develop an adequate range of alternative educational options for students removed from class or school, whether on a temporary, long-term, or permanent basis, as well as over-age students. Although the Code of Virginia outlines clear procedural standards for suspensions and expulsions, local school boards have traditionally held broad discretionary authority in establishing grounds for these disciplinary actions. While removal from the classroom is sometimes necessary to preserve the learning environment and to protect the interests of those students observing conduct rules, adequate staff, and facilities must be provided to meet the educational needs of students who are removed from the classroom. A variety of instructional styles may also be required. Our current alternative education options must be expanded to address the placement of over-age students as well.

All too frequently, children are not suspended or expelled because there is no good alternative educational setting to which to send them. When all else fails, they are "expelled to the streets," creating potential problems for the community as well as a life of limited opportunity for themselves.

The issue is to fund enough alternative settings so that there are effective and valid options for dealing with disruptive and over-age students. If a student's behavior in the most severe alternative setting is still disruptive, the last point in the continuum would be referral to the juvenile justice system.

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[23] For further information see Appendix C, Consequences and Accountability subcommittee report.

## Technical Assistance

**26. A research unit for the collection and dissemination of information regarding "best practices" shall be established within the Department of Education to serve as a resource for school divisions. Priority shall be placed on serving school divisions with less than a 70 percent pass rate on the Literacy Passport Tests and the Standards of Learning tests.**

A systematic means of identifying and analyzing effective programs and instructional practices is necessary to help school divisions share some of the successful initiatives already in place throughout the Commonwealth.[24] As schools establish performance records based on the SOL assessments, many will need assistance in improving student performance. There should be established within the Department of Education a research and evaluation unit to conduct evaluative studies and provide the resources and technical assistance that are essential to increasing the learning capacity of our school divisions, and to identify practices and organizational structures that encourage student learning. This research unit would evaluate the success of programs encouraging parental and family involvement; assess changes in student outcomes prompted by family involvement; and collect and disseminate "best practices" among school divisions. In addition, this unit might also provide leadership and resources supporting professional development for administrators and teachers.

The work of this unit should encompass gathering and analyzing quantitative and qualitative data, evaluating instructional programs, conducting case studies, following groups of students in special subpopulations for longitudinal studies, publishing reports, and engaging in other forms of research and evaluation that will inform and enhance school division and school level decision making.

**27. The Department of Education shall include in the Outcome Accountability Project report, made annually to the public on the progress of Virginia's schools in improving or failing to improve student learning performance, an analysis of the strengths and weaknesses of public education programs in the various school divisions in Virginia and shall make recommendations to the General Assembly for further enhancing student learning uniformly across the Commonwealth.**

The Outcome Accountability Project (OAP) is a comprehensive annual report of state, school division, and school performance. OAP reports data on 46 individual outcome indicators of student educational performance for elementary, middle, and high schools in every school division. The outcome indicators are measures of student attainment or accomplishment on such measures as school attendance, dropout rates, the number of students earning a particular diploma, and the results of various standardized tests.

An analysis of the strengths and weaknesses of school programs is needed to ensure that the public is notified not only of the performance of their schools, but also reasons for those performance levels and recommendations for improving performance at the school level.

**28. The Department of Education shall conduct technical assistance visits to low-performing school divisions on an established cycle. Schools accredited with a warning must be given priority for technical assistance that begins with analysis of relevant school data and continues through the development and**

[24] All subcommittee supported this recommendation. See Appendix C, Support for Teaching and Learning subcommittee report.

**implementation of an improvement plan.**

Revisions to the Standards of Learning and the Standards of Accreditation have challenged school divisions across the Commonwealth to examine their curriculum, instructional methods, and overall performance. Implementation of these Standards, as well as compliance with the Standards of Quality, must be facilitated with appropriate technical assistance by the Department of Education through regular site visits to individual school divisions.

## Educational Technology

**29. The Department of Education in collaboration with the Center for Innovative Technology and other high technology companies in Virginia shall assess the technology needs of local school divisions and establish guidelines for connectivity, including school local area networks; architectural models, definitions for local versus shared services such as video bridges), and leveraged volume purchase agreements. The ultimate result should be that the Commonwealth is connected through a network infrastructure to support K-12 school initiatives for the 21st century, provide access for voice, data, and video telecommunications, and enhance the educational equality and experience for all Virginians, regardless of location in the Commonwealth. The Department shall report the results of the needs assessment and the guidelines to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.**

In 1994 the General Assembly began an educational technology initiative to provide equal opportunity to all children of Virginia by funding the Board of Education's Six-Year Educational Technology Plan. Through continued support of this initiative, progress has been made toward the goal of one computer for every five students. The latest survey concludes that Virginia schools have one computer for every nine students. We endorse the continuation of this initiative to provide access to computer technology throughout the Commonwealth and support funding to move to the goal of one computer for every five students.

Virginia leads the nation and the world in its networking capability. Only in Virginia and Singapore is Asynchronous Transfer Mode networking available throughout the state. Net.Work.Virginia, the Commonwealth's precedent-setting high-speed network, can carry thousands of simultaneous, two-way flows of voice, data, and video. Under the terms of the contract negotiated by Virginia Tech, Bell Atlantic, and Sprint, all of Virginia's local exchange companies are represented by Bell Atlantic, which means that Net.Work.Virginia can reach anywhere in the Commonwealth, accommodating any of Virginia's schools, libraries, and state and local agencies that want to be on the system, regardless of their geographic locations.

What is needed is the infrastructure to connect all our schools to this networking capability. Some school divisions have moved ahead with implementing local educational technology plans and have updated their connections. This recommendation addresses uniformity of access to all school divisions across Virginia in order to utilize Net.Work.Virginia to the fullest.[25]

Through this infrastructure initiative we will expand our classrooms through distance learning capabilities so critical for smaller and more remote jurisdictions and facilitate teacher

[25] Appendix H provides an overview of potential plans for expanding the use of Net.Work.Virginia in public schools.

training and professional development through a better Internet environment. Under discussion by the State Council of Higher Education in Virginia is a proposal to expand its educational technology training for teachers, aiming to train 30,000 high school teachers over a four-year period. The Commission supports this initiative.

This proposal envisions one video classroom in every high school in Virginia; home pages and Internet tools; e-mail between faculty and students; office and presentation tools; and video tools as part of the classroom extension. Every school building would be connected to the Net.Work.Virginia cloud directly, and costs would be equal, fixed monthly charges for everyone. There will be no time, distance, or usage charges.

**30. Proficiency in educational technology shall be a condition of licensure for all teachers in Virginia's public schools, and the General Assembly shall provide grants for implementing the recommended technology infrastructure, hardware and software for teacher education programs in public institutions of higher education in the Commonwealth.**

Educators must be effectively prepared to use and provide instruction in rapidly changing educational technology. Adding technology proficiency to licensure requirements for new teachers and creating minimum competency requirements for license renewal by experienced teachers will help ensure quality instruction in this area.

Proposed guidelines to aid teacher education programs in their efforts to ensure the educational technological competence of their graduates suggest, among other things, that classrooms be equipped with network-ready, multi-media computers or built-in networking capability to provide access to the Internet for instructional purposes; that full-time faculty members in teacher education programs be provided network-ready, multi-media computers for their offices at institutional expense, and that educational technology also be integrated into practice and field experiences within the teacher education program.

**31. Staffing levels outlined in the Standards of Quality shall require the employment of at least one full-time educational technology expert per school division.**

To increase the capacity of schools and educators in the use of educational technology, specific positions should be required and funded through the Standards of Quality. At least one full-time educational technology expert is needed in each school division for educational technology maintenance, support, planning and training.

## III. Engaging Constituencies

Our schools must establish active engagement with the constituencies they serve—students, families and communities, as well as business and industry—to promote confidence in and involvement with the public education system. Greater opportunities for family and community input in the education of students will build consensus and reinforce the sense of shared responsibility for the success of our educational system. The perspectives of business and industry are needed to develop and maintain a program of instruction that reflects current and future workforce needs.

### Family and Community Involvement

**32. Each school division shall establish a voice mail communication system after regular school hours for parents, families, and teachers by the year 2000.**

A number of Virginia school divisions have successfully implemented two-way voice-mail communications systems that allow parents access to daily messages about classroom activities and the ability to convey to teachers their concerns and questions. In a world of busy two-wage earner families, technology can help close the communication gap. The cost is low and, in some cases, provided free of charge by a local business. The system can be set up using a PC computer and a telephone voice-mail expansion card. We recommend this program be implemented statewide.

**33. The General Assembly shall provide two competitive grants per superintendents' region to schools and school divisions to plan, develop, promote, and expand meaningful family/community involvement programs designed to facilitate parents' creation of supportive learning environments at home and involvement in their children's learning at school and in school activities.**

**34. The Commonwealth shall require pre-service programs and fund the establishment of in-service programs for teachers, principals and administrators designed to strengthen educators' ability to communicate and work with families and help families become involved in their children's learning at home and at school.**

**35. The Department of Education shall gather and disseminate information and provide resources for implementing family/community programs, including information on potential private funding, support sources, and existing exemplary programs (including, but not limited to *The Directory of Selected Programs of Parent/Community Involvement in Virginia's Schools*).[26]**

All research during the last 30 years on parental involvement in their children's learning has shown the same result: parent involvement increases student achievement in all community types—rural, urban, suburban—and at all grade levels, all socioeconomic levels, and all parent education levels, as noted in the 1994 report of the Parent Summit Working Committee. According to one summary of the research cited, "the most accurate predictor of a student's achievement in school is not income or social status, but the extent to which the student's family is able to (1) create a home environment that encourages learning; (2) express high expectations for

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[26] Parent Summit Working Committee, *The Education Summit on Parental/Community Involvement* (Richmond, VA: Author, November 15, 1994), p. 74 [hereafter referred to as Parent Summit].

their children's achievement and future careers; and (3) become involved in their children's education at school and in the community."[27]

A 1992 study correlated parent-controlled home factors with student achievement as shown by National Assessment of Educational Progress scores, finding that "three factors controlled in large part by the home—student absenteeism, reading materials in the home, and excessive television watching—explain nearly 90 percent of the difference" in eighth grade math test scores in 37 states.[28]

The definition of parental involvement used in most current literature on the topic includes six types and focuses mostly on parents creating supportive learning environments at home, including working together with school staff to do this; on parents volunteering and participating in various school activities and in school governance, such as advisory councils; and on effective two-way communication between schools and parents.

## Business and Professional Involvement

**36. To enhance on-going partnership efforts between schools and businesses, the Board of Education shall establish a new program of 16 pilot grants to provide incentives for partnerships between school divisions and local business and industry that focus on teaching higher level skills and the application of new knowledge.**

The High Schools That Work initiative, sponsored by the Southern Regional Education Board, is a network of more than 500 high schools throughout the country focusing on increasing the mathematics, science, communications, problem-solving and technical achievement of career-bound students. Currently in Virginia 58 high schools participate in the High Schools That Work initiative. Data from SREB about the extent to which work is related to learning show that higher student achievement is related to the following work activities: the student observed veteran workers; someone taught the student at work; his/her job performance was evaluated; someone taught him/her new technical skills frequently; and the student was frequently encouraged to develop good working habits. We recommend that the High Schools That Work model be replicated in more Virginia high schools.

A program of $12,500 grants, provided on a 50/50 matching basis, two for each of the eight superintendents' regions, will encourage local school divisions to develop innovative working relationships with employers to determine how best to prepare students for the workplace. These partnerships will consider curriculum revision, an accelerated academic program for all students, heightened sensitivity to student potential, interdisciplinary cooperation among teachers in planning and instruction, family involvement, student counseling, and additional assistance for students to meet the higher curriculum standards.

Programs to be funded will demonstrate plans and action in the following areas: cross-curricular revision to integrate theory and application, an accelerated program for all students, interdisciplinary cooperation between teachers in planning and instruction, heightened sensitivity to student potential, counseling for students and involvement of parents, additional help for students to meet the higher standards, and a commitment to working with local businesses as partners in a

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[27] A. Henderson and N. Berla, *A New Generation of Evidence: The Family is Critical to Student Achievement* (Washington DC: National Committee for Citizens in Education, 1994), as quoted in Parent Summit, *supra* note 13 at 10.

[28] Parent Summit, *supra* note 13 at 10.

joint endeavor.

Businesses serving as partners with schools will provide an inventory of entry-level skills needed by potential employees, will provide structured opportunities for teachers and students to job shadow and be mentored by company personnel, and will make a commitment to work with school administrators on developing creative ways of using existing resources.

**37. Local school boards shall be required to establish local business advisory councils.**

Input from the business community is vital to ensuring that our public schools are preparing students for the world of work. Comprised of broad representation from business and industry, local business advisory councils may be charged with evaluating local programs, making recommendations for change, assisting in raising academic standards, and ensuring that students are being taught the requisite entry-level employment skills.

Over the past decade, partnerships between businesses and public schools have increased nationwide, typically in the form of adopt-a-school initiatives, mentoring, shadowing professionals in the workplace, and career day participation. Virginia businesses should be encouraged to engage in similar long-term relationships with our public schools and should regularly meet with state and local educators regarding changing workforce needs and skills. The Department of Education should, in collaboration with the Virginia business community, provide information to school divisions on ways to establish and expand relationships with local business.

**38. A state business advisory council shall be established to advise the Governor and the Board of Education regarding workforce and education issues.**

Complementing the efforts of local business advisory councils will be a state business advisory council to advise the Governor and the Board of Education regarding workforce readiness concerns and the educational preparation required for successful workforce entry. The council will also participate in the review of the Standards of Learning and coordinate communications between the executive branch and business and industry regarding successful business/education partnerships.

# IV. Responsibilities, Accountability, and Consequences

## Responsibilities

The Constitution of Virginia places on the General Assembly the ultimate responsibility to "establish and continually maintain" a "system of free public elementary and secondary schools" that provide "an educational program of high quality." "General supervision" of the public school system is vested in the Board of Education, appointed by the Governor, subject to confirmation by the General Assembly. The Board of Education prescribes Standards of Quality, subject to revision by the General Assembly. The General Assembly also determines the manner in which state and local funds are provided for the cost of maintaining an education program that meets the prescribed standards. Pursuant to statute, the supervision of schools is vested in local school boards, which have the power and duty to operate and maintain the public schools in each division according to law. The accountability of the General Assembly, Board of Education, and local school boards for meeting these objectives rests, ultimately, with the public through the electoral process.

## Accountability

Accountability for the educational system has been described as a tripod with three legs: standards, assessments and consequences. Without all three there is no way to hold students, teacher, schools, or ultimately elected officials accountable for meeting the constitutional mandate of "free public elementary and secondary schools" that provide "high quality" programs.

Until recently, Virginia, like most states, has relied on annual public disclosure of student test results by schools and school divisions as its primary accountability program. While useful information is provided, there are few, if any, consequences to students, teachers, or schools for poor performance. As a result, students are frequently promoted despite their inability to master the material; schools with high levels of non-achieving students have gone year after year with no special assistance and no required changes.

In recent years this pattern has begun to change in Virginia and nationally. Major cities, including Chicago and Denver, have severely limited social promotions and mandated summer school for students performing well below grade level. Many states have significantly stiffened graduation requirements. Some states, like Maryland, require students to pass rigorous exams to graduate or, like Florida, require students to maintain a C average. New Jersey and other states have declared failing school districts "bankrupt" and stepped in to reorganize such schools and school districts, removing teachers, principals, and school administrators.

Other states have focused on positive incentives. Georgia and California, for example, offer rewards and scholarships to high achieving students. Oklahoma celebrates student scholars as well as student athletes. Kentucky and other states provide financial incentives to high performing schools and, in some cases, to all the teachers in such schools.

Virginia is in the forefront of this accountability movement. It leads the nation in developing rigorous grade-by-grade academic standards. It is committed to statewide assessment of virtually all children in grades 3, 5, 8, and high school. In recent months the Board of Education has imposed more rigorous standards for school accreditation. Passing scores on many end-of-course exams will be required for high school diplomas beginning with ninth-graders in 2000-2001, and schools in which less than 70 percent of the students pass the applicable state exams will lose their accreditation after the 2006-2007 school year.

As commendable and important as these steps are, they do not constitute a comprehensive system of student, teacher, and school accountability with a balanced menu of rewards and consequences. To increase accountability for public education in Virginia, it is imperative to build on those existing standards, programs, and consequences that will ensure that an "educational program of high quality is established and continually maintained."

Consequences should be both positive and negative. Student assessments must be valid, reliable, and equitable. Evaluations of schools and school divisions must recognize special needs populations. Rewards—and consequences—should be meaningful, and based upon meeting or making material progress toward clearly articulated performance standards.

## Consequences

**39. The Commonwealth's accountability initiative shall include a system of state and local incentives or rewards for students.**

Incentives provide a powerful stimulus to improved performance. State and local recognition programs for students excelling academically might include options for early graduation; postsecondary scholarships; school-to-work opportunities, such as internships with local businesses; and public recognition by schools, school boards, and the Governor.

**40. Effective for the 2004-2005 school year, promotion of any student failing the fifth or eighth grade English or mathematics SOL examination shall be contingent upon the school's provision of and the student's participation in a structured remedial program. A second promotion after failing to pass one or both exams should be granted only in specific situations, such as for certain ESL students and students with disabilities, and the school shall advise the public and the Board of Education of the number of such exceptions granted.**

There must be an end to the "social promotions" that have allowed students to advance in school ill-prepared to meet increasing educational challenges. Instead, meaningful remediation must become an integral part of educational accountability in order to give students the timely instruction necessary to meet the revised standards. Promotion to the middle and high school level for students failing the respective English or mathematics SOL examination should be conditioned upon participation in an individually structured remedial program.

**41. A system of state and local recognition, including both incentives and consequences, shall be established for teachers and administrators.**

We need to do more to recognize and celebrate excellent teaching and excellent leadership in schools. As we focus more and more on student outcomes, we can more easily identify those teachers and those schools that are making a difference.

Recognition can take many forms, from teacher and principal of the year to more tangible recognition. The most able and effective teachers should be selected to be lead teachers in math and science, as well as mentor teachers and clinical faculty. Funds made available to outstanding schools can be used in part for enriched professional development programs for some or all of the teachers and administrators in such schools. By the same token, outstanding principals may have priority for professional development opportunities.

The effectiveness of incentives to improve performance has been cited not only by educators but by business leaders as well. Bonuses and awards are common motivators of performance in the workplace and may similarly prompt improvement in public education. An August 1996 report examining incentive programs in Indiana, Kentucky, South Carolina, and Texas noted that while results-based accountability systems might motivate improvement, intrinsic rewards, nonmonetary recognition of improvements, and public awareness of poor performance are more motivating than financial rewards to individual teachers.

Our recommendations to reestablish the lead teacher, mentor teacher, and clinical faculty programs support the recognition of effective teachers; and those selected for these programs will receive added pay and released time to support their new activities. Recognizing and retaining effective teachers in the classroom is a critical factor in improving student achievement. We cannot afford to lose these teachers to administrative positions.

**42. Any school which experiences three or more years of provisional accreditation may be subject to being reconstituted by a directive of the division superintendent. The principal, teachers or entire staff may be reassigned to other positions in the system.**

Staff members in the affected school may be given an opportunity to apply to remain in the school. Team problem-solving shall be encouraged. An accountability plan developed by the stakeholders in the school will be designed and approved by the superintendent. The accountability plan shall include teacher and principal evaluation procedures. Incentives and rewards shall be created to encourage and promote growth in student learning.

**43. A system of state and local incentives or rewards shall be created for schools demonstrating excellence or showing significant improvement toward clearly stated goals, including academic performance and family involvement.**

Recent years have witnessed renewed interest among the states in ways to acknowledge and reward improvement in pupil academic performance and in the delivery of educational services. Incentive programs in some states reward not only exceptional educational performance of schools or school divisions, but also continued improvement by those schools that may face special challenges prompted by low education and income levels, school overcrowding, a lack of local ability or commitment to support public education, or high concentrations of special needs students. Such program experience has been shown to work in the states utilizing such rewards and incentives. Their results demonstrate overall student improvement and higher school personnel morale.

Incentives that encourage positive academic performance in Virginia's public schools should include recognition for academic achievement and family involvement. Consistent with the recommendations of the Joint Subcommittee Studying the Efficacy and Appropriateness of Creating a School Incentive Reward Program in the Commonwealth (HJR 165 -1996), a system of rewards should measure improved performance of individual schools, rather than compare schools. Benchmarks should be established for individual schools, and financial rewards, calculated at $1,000 per teacher, given to those schools demonstrating the requisite improvement over their prior performance. Similar to the model established in the North Carolina School-Based Management and Accountability Program, these awards would then be applied to programs selected by teachers and administrators within each individual school. Funding for these financial rewards would be capped by the legislature, but should nonetheless be meaningful and sustained over time.

**44. School divisions with schools demonstrating a passing rate of less than 70 percent on all three Spring 1998 Literacy Passport Tests by students taking these tests for the first time shall develop a comprehensive corrective action plan with and for each school during 1998-99 for implementation no later than 1999-2000, including specific goals for improvement and shall receive technical assistance from the Department of Education in implementing this plan. The affected schools shall be rewarded for achievement of their goals.**

In 1988, the General Assembly completely revised the Standards of Quality and added a Literacy Passport requirement to the standards for graduation. Recommended by the Governor's Commission on Excellence in Education, the Literacy Passport Test (LPT) program awards literacy passports to all students, including students with disabilities, achieving passing scores on three-part tests created by the Board of Education. Promotion to the ninth grade is contingent upon passing the Literacy Passport Test; a statutory exception is made for disabled students who are progressing according to an individualized education program (IEP). Also exempt from this requirement are students for whom English is a second language and who have been enrolled in a Virginia public school for less than one year before the Literacy Passport requirement. The statute requires these pupils to achieve passing scores on the first literacy test administered after three years of enrollment. In the spring of 1997, of the 80,883 public school sixth grade students who took all three parts of the Literacy Passport Test, slightly more than 68 percent (55,268 students) passed all three parts of the test on their first attempt.[29] Forty school divisions, or 30 percent of the 130 school divisions, achieved pass rates of 70 percent or above by sixth grade students on all three parts of the Literacy Passport Test.

In 1998, schools with a passing rate of less than 70 percent on all three Literacy Passport Tests by students taking these tests for the first time shall develop a corrective action plan during the 1998-99 school year, including specific goals for improvement, for approval by the local school board with implementation no later than the 1999-2000 school year.

The corrective action plan should address, among other things, professional development programs targeting improved teaching, particularly in identified areas of deficiency; remediation programs designed to increase time on task and to accelerate learning; reading programs having a goal of achieving 90 percent of all students reading at grade level for grades 1 through 3; programs increasing parental, community, business, and professional involvement; and the identification and utilization of additional resources inside and outside the school community.

The Department of Education shall provide technical assistance to these schools (1) to help identify the areas of need and (2) to advise on the best methods to meet those needs. Schools meeting their goals shall be rewarded for achievement of these goals at the end of the 1998-99 school year with a sum equal to $1,000 per teacher in the school. Schools failing to meet their specified goals shall adopt a revised corrective action plan, with the Department's assistance and school board approval, for implementation the following school year. To the extent available, additional state and local funds should be directed to meet the identified needs within the school.

The Department of Education shall fully advise the General Assembly of the specific assistance provided to these schools, setting forth the needs identified, the solutions suggested, and the results achieved. The report shall be presented to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1 annually.

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[29] Virginia Department of Education, *Report of the Virginia Literacy Testing Program - Spring 1997* (Richmond, VA: Author, 1997), p. 7.

## Other

**45. The Virginia Code Commission shall undertake a recodification of Title 22.1 to ensure clarity, uniformity, and consistency in Virginia's public education statutes.**

Title 22.1, the Commonwealth's public education statutes, was last recodified in 1980 following a 1977 General Assembly directive that the Virginia Code Commission conduct a thorough and comprehensive study of the laws governing public elementary and secondary education. The increasing press of legislation in the ensuing 17 years has produced a patchwork education code, once again in need of review for uniformity and consistency. Outdated and duplicative provisions should be revised or eliminated; statutory directives to agencies, school boards, and others should be reviewed to promote clarity as well as compliance.

As our education policies and laws move forward to clarify the role of the Board of Education in PK-12 education, including vocational/technical education, provide a more inclusive approach to the implementation of high academic standards throughout the PK-12 curriculum, and ensure greater responsiveness to the needs of business and industry, a title recodification will provide the clarity necessary to support excellence in public education.

In conclusion, the Commission wishes to express sincere thanks to the members of its advisory task forces; the many state and local school officials who appeared before it; the parents, businesspersons, educators, and members of the public who spoke at the public hearings; as well as the experts, advocates, activists, and citizens who have assisted in its work.

Respectfully submitted,

THE COMMISSION ON THE FUTURE OF PUBLIC EDUCATION

DEL. W. W. "TED" BENNETT, CHAIRMAN
THE HON. HUNTER B. ANDREWS, VICE CHAIRMAN[30]
DEL. J. PAUL COUNCILL, JR.
DEL. FLORA CRITTENDEN
DEL. ALAN A. DIAMONSTEIN
DEL. LINDA PULLER
SEN. STANLEY C. WALKER[31]
THE HON. A. LINWOOD HOLTON
SEN. EMILY COURIC
PATRICIA PAYNE LIGHTNER
HUGH R. STALLARD
ALAN L. WURTZEL

30 See attached letter.

31 Sen. Walker supported each recommendation in the report, but abstained on the cost estimates.

DISSENTING MEMBERS:[32]

SEN. JOHN H. CHICHESTER
SEN. WARREN BARRY[33]
SEN. STEPHEN D. NEWMAN
DR. RICHARD LA POINTE
WILLIAM D. HANSEN

---

32 See attached Minority Report.

33 See attached letter.

HUNTER B. ANDREWS
16 SOUTH KING STREET
HAMPTON, VIRGINIA 23669

12/15/97

December 12, 1997

Honorable William W. Bennett, Jr.
P.O. Box 1219
Halifax, Virginia 24558

Dear Ted:

Congratulations on a tough job well done. You have led a large group of interested citizens, legislators, and officials in a major forward thrust in public education. I am confident you feel relieved the first phase of the job is over, and you look forward to the implementation section.

Although we all did not agree on the details of each of the recommendations, under your leadership you held us together. [As I stated at a previous meeting in October, I could not vote intelligently on all recommendations until I knew the financial consequences. I therefore abstained on the final vote, but did vote favorably on each of the items as you moved them forward.]

Certainly, the implemented phase will not only be challenging, but difficult. The importance of the recommendations are now before the General Assembly and the public, and deserve the necessary funds to be effective.

The Bennett Commission now retires formally, but I'm sure you can count on the members support as you gain momentum. The Bennett Commission has set a new yardstick to judge public education.

May you and yours have a happy, healthy, and peaceful holiday, and may the New Year bring you and yours the happiness you deserve for a job well done, thou true and faithful public servant.

Thank you for all courtesies extended to me.

Sincerely

Hunter B. Andrews

# Future of Public Education - Minority Report

The Commission on the Future of Public Education has set high goals and articulated a broad "vision" which we share:

"*Our vision is to help each student reach his or her highest potential.*"

Virginia has a proud history of responding to the changing needs of public education. Through the years Virginia has understood the importance of looking ahead, so that we can adapt to the anticipated changes in our future. Virginia also has a rich history of improvement, even during times of disagreement. It is our sincere hope that this will be one those times when different opinions will make Virginia stronger and her future brighter.

The minority believes that the Commission's report is flawed in three ways.

First, this Commission has spent two years and well over $200,000.00 to produce a document which, for the most part, makes only vague recommendations. Many of the difficult details are left to other boards or to the imagination. The report fails to quantify or qualify the actual and specific problems in education before making the recommendations. This error has made it nearly impossible to present detailed solutions. This absence of narrow focus has produced a report that lacks the details of how to implement a "wish list" of ideas.

Second, we disagree with one of the basic assumptions in the report. The document relies on the assumption that the "Application of Knowledge" is the way to improve education. Numerous studies have repeatedly shown that such changes would produce outcomes that are difficult, if not impossible to measure on a state wide basis.

This approach is even more disturbing because it threatens the education reform program which is being implemented in Virginia today. Virginia is leading the nation in education reform. We now have high and rigorous academic Standards of Learning (SOL) in English, math, science and history for K-12. The Commission's report urges the Commonwealth to tamper with the current SOL to account for this new method of learning. We believe that the new SOL should be given ample time to work before such experimental changes are made.

It is unfortunate that many meetings of the Commission have resulted in a struggle over the implementation of the Standards of Accreditation (SOA). Most of these disagreements centered around whether or not Virginia will expect at least 70% of our students to pass the new tests.

Clearly the new SOA and SOL will raise the academic expectation for our schools, and help end social promotion and make schools more accountable for teaching our children. Virginia's children will benefit from these well planned, structured and most importantly specific improvements in the new standards. Therefore, we want to make it clear than we can not support any weakening of these standards.

Third, despite the enormous amount of funds spent on this study, the Commission has failed to develop the accurate fiscal impact that it has recommended. The Senate Finance staff has indicated that it may be impossible to calculate all the cost due the lack of specifics; the Department of Education has shared similar frustrations. However, the Department's best guess is that it will take nearly half of a billion dollars to implement these general proposals. This single failure alone makes the document impossible to responsibly prioritize and unrealistic to implement.

In conclusion, the minority believes that there are some areas of agreement in the document, however these concerns have made it necessary to produce this minority report.

Richard LaPointe
Superintendent of Public Instruction
Virginia Department of Education

Beverly Sgro
Secretary of Education

Stephen D. Newman
Senator

John Chichester
Senator

Lil Tuttle
Vice President
Board of Education

Robin DeJarnette
The Family Foundation

William D. Hansen
Education Finance Counsel
Executive Director

# SENATE OF VIRGINIA

WARREN E. BARRY
37TH SENATORIAL DISTRICT
PART OF FAIRFAX AND
PRINCE WILLIAM COUNTIES, AND
PART OF THE CITY OF FAIRFAX
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COMMITTEE ASSIGNMENTS
EDUCATION AND HEALTH, CHAIRMAN
COMMERCE AND LABOR
FINANCE
TRANSPORTATION
RULES

December 17, 1997

DISSENTING STATEMENT OF SENATOR WARREN E. BARRY

ON THE REPORT OF THE COMMISSION ON THE FUTURE OF PUBLIC EDUCATION

It is with regret that I find that I cannot sign the above referenced report. While this Commission, and particularly the Chairman, Delegate Ted Bennett, have put forth a major effort to address the numerous problems confronting public education and the findings contain many positive and constructive proposals, the report is submitted without full knowledge of realistic financial cost and impact. The suggested mandate for full day kindergarten, in itself, will have major financial consequences to a number of localities who currently enjoy the option of half day versus full day programs. There are numerous far reaching proposals made without knowing the ramifications thereof.

Finally, because of the wide scope of the Commission's work, the final report had numerous changes and redrafts during a short period of time, which has left educators, the public, and a number of commission members without proper time to digest the true meaning.

Warren E. Barry

## Appendix A

## HOUSE JOINT RESOLUTION NO. 196

Establishing the Virginia Commission on the Future of Public Education.
Agreed to by the House of Delegates, March 9, 1996
Agreed to by the Senate, March 9, 1996

WHEREAS, Virginia public education has developed significant strengths in the latter part of this century, responding to the needs of a modern Commonwealth; and

WHEREAS, all of education is now challenged by major technological, social, and economic changes which dramatically alter the work of the State's schools, colleges, and universities; and

WHEREAS, the social and economic demands of the twenty-first century can be expected to place even greater emphasis upon the importance of an educated citizenry in the Commonwealth; and

WHEREAS, the leaders of Virginia industry stress that a strong educational system is needed to create and sustain a skilled workforce to enable Virginia to compete in global markets; and

WHEREAS, creativity and innovation in the delivery of vocational education will enhance the Commonwealth's ability to produce such a skilled and competitive workforce for the twenty-first century; and

WHEREAS, a critical standard by which public education should be measured is the extent to which it prepares all students to succeed in, and contribute to, the general well-being of a technologically advanced society; and

WHEREAS, the revised Standards of Learning will significantly strengthen academic standards and it is essential that a concerted effort be made to determine and provide a curriculum based on these new Standards and to supply instructional materials and related assessments to ensure that students acquire and are able to apply the knowledge and skills needed to succeed in the next century; and

WHEREAS, the public schools are essential pathways to the workplace and to the Commonwealth's colleges and universities; and

WHEREAS, given the challenges and demands of the 21st century, maintaining a system of high quality public education requires vision, strategic planning, and specific measurable goals; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Virginia Commission on the Future of Public Education be established. The Commission shall develop a vision for public education consistent with its Constitutional mission, and a strategic plan for accomplishing the vision and mission of public education, which shall include (i) feasible innovations for implementing the revised Standards of Learning to enhance students' preparation for future learning and work; (ii) teaching strategies and methodologies, and teacher pre-service and in-service preparation and training, with particular attention given to teacher training needed to assist students in applying concepts and transferring skills; (iii) organizational patterns and

management of public schools, the public school infrastructure, incentives and rewards to school divisions that successfully meet state requirements, and whose students attain or maintain high academic achievement; (iv) current and future workforce skills and knowledge needed by high school graduates in the workplace; (v) curriculum and instructional materials and educational technology needs; (vi) student and teacher assessments, and school accountability; (vii) correlation of the objectives of the revised Standards of Learning with the competencies needed for success in employment and postsecondary education; (viii) business and industry linkages and partnerships; (ix) collaborative initiatives with institutions of higher education for augmenting instruction and providing teacher training; (x) parental involvement, student learning styles, educational alternatives and choices of students for career preparation; (xi) funding needed to enable public schools to meet the vision and mission of public education; and (xii) communication and coordination with other legislative studies charged similarly to examine the needs of public education and educational technology.

In the course of its deliberations, the Commission shall consider pertinent issues raised in the following resolutions introduced at the 1996 Regular Session of the General Assembly: House Joint Resolution No. 91, House Joint Resolution No. 11, House Joint Resolution No. 192, House Joint Resolution No. 249, Senate Joint Resolution No. 59, Senate Joint Resolution No. 76, and Senate Joint Resolution No. 112.

The Commission shall be composed of 21 members to be appointed as follows: 5 members of the House of Delegates, 3 of whom shall be members of the House Committee on Education to be appointed by the Speaker of the House of Delegates; 3 members of the Senate who serve on the Senate Committee on Education and Health to be appointed by the Senate Committee on Privileges and Elections; the President Pro Tempore of the Senate; a former Governor of the Commonwealth to be appointed by the Speaker of the House; the President of the Board of Education; the Superintendent of Public Instruction; and 6 eminent persons within and without the Commonwealth, 3 of whom shall be appointed by the Speaker of the House, 2 of whom shall be appointed by the Senate Committee on Privileges and Elections, and 1 of whom shall be appointed by the Governor. The Secretary of Education, the Chancellor of the Virginia Community College System, and the Director of the State Council of Higher Education shall serve ex officio without voting privileges. The chairman of the Commission shall be appointed by the Speaker of the House.

The Commission shall seek the participation of persons with expertise and vision to assist the commission in its work. Such persons shall include, but not be limited to, parents, students, teachers, administrators, business leaders, local elected officials, and other interested citizens.

The Commission shall employ such independent staff as it deems necessary from such funds as may be appropriated for this purpose. Technical assistance shall be provided by the staffs of the Division of Legislative Services, the House Committee on Appropriations, the Senate Committee on Finance, the Department of Education, the State Board for Community Colleges and the State Council of Higher Education for Virginia. All other agencies of the Commonwealth shall provide assistance to the Commission, upon request.

The direct costs of this study shall not exceed $20,000.

The Commission may submit an interim report to the Governor and the 1997 Session of the General Assembly, and shall complete its work in time to submit its final findings and recommendations to the Governor and the 1998 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

Implementation of this resolution is subject to subsequent approval and certification by the Joint Rules Committee. The Committee may withhold expenditures or delay the period for the conduct of the study.

***

## Appendix B
## Meetings of the Commission

**August 5, 1996**
**General Assembly Building, Richmond**
Board Of Education Initiatives--Standards, Testing, Accreditation: Lil Tuttle, *Vice President, Board of Education*; A Decade Of Focus On Public Education: Karen Washabau, *Project Director*; Overview of the issues in HJR 196 and other and new on-going studies: *Delegate W.W. Bennett, chairman*

**September 12, 1996**
**General Assembly Building, Richmond**
Observations of community leaders on the priority areas for the Commission's work Dr. William Bosher, *Superintendent of Schools, Chesterfield County*

**October 10, 1996**
**General Assembly Building, Richmond**
Remarks: Milton Goldberg, *Senior Vice President, National Alliance of Business*; Richard Sharp, *President, Virginia Business Council*; Eva Teig, *Chair, Education Committee, Virginia Chamber of Commerce*; A Program That Works: Work Keys: John MacIlroy, *President, Virginia Manufacturers Association*; Jerry Miller, *Regional Representative, American College Testing*; Public Comments: John Axselle, *Vice President, the OptiCom group*

**November 14, 1996**
**General Assembly Building, Richmond**
PREPARING STUDENTS FOR THE WORLD OF WORK--Work-Based Learning: The Key to School-to-Work Transition for All Students: Dr. James Hoerner, *Professor of Career and Occupational Studies, Virginia Polytechnic and State University*; Preparing Students for the World of Work: Dr. Neils Brooks, *Director, Office of Vocational and Adult Education Services, Department of Education*; High Schools That Work--Local Sites: Jean King, *Gloucester High School*; Richard Turner, *Assistant Principal, William Byrd High School, Roanoke County*

**December 4, 1996**
**General Assembly Building, Richmond**
Efforts in State-Level Results-Oriented Education: Chris Pipho, *Education Commission of the States*; Where the Money Comes from and Goes in Public Education in Virginia and Strategic Plan for Implementing the Standards of Learning and the Standards of Accreditation: Dr. Richard La Pointe, *Superintendent of Public Instruction*; Education in the 21st Century: The Processes By Which We Achieve Results: Dr. Margaret Cozzens, *National Science Foundation*; Effective Mathematics and Science Instruction: Dr. Bill Haver and Reuben Farley, *Virginia Commonwealth University*; Additional Viewpoints: Cheri James, *president, Virginia Education Association*; Kristen Amundson, *legislative chairperson, Virginia School Boards Association*; Dennis Kellison, *superintendent, Orange County Schools*

**January 8, 1997 -- Joint Meeting of the Subcommittees**
**General Assembly Building, Richmond**
1996 *High Schools That Work* Assessment Data: Dr. Gene Bottoms, *Southern Regional Education Board*

**March 13, 1997**
**General Assembly Building, Richmond**
Support for Teaching and Learning Subcommittee report: Hugh Stallard and Delegate Linda T.

Puller, co-chairs; The Presence of Arts Education in Virginia Schools: Lyn E. Tarabick, *executive director, Virginia Music Educators Association, representing the Virginia Fine Arts Leadership Coalition for Education;* status reports from subcommittee chairpersons: Dr. William Bosher, *co-chair, Teaching and Learning Subcommittee;* Senator Emily Couric and Robert Meredith, *co-chairs, Options for Students Subcommittee;* and Dr. Thomas Smith, substituting for Alan Wurtzel, *co-chair, Consequences and Accountability Subcommittee*

**April 10, 1997**
**General Assembly Building, Richmond**
Teaching and Learning Subcommittee report: Delegate W.W. Bennett, chair, and members of the subcommittee; Response to Commission's Inquiries Regarding the Proposed Standards of Accreditation: Dr. Richard La Pointe, *Superintendent of Public Instruction*; Statutory Relationship of the Standards of Quality, Standards of Accreditation, and Standards of Learning: Norma E. Szakal, Esq., *Senior Attorney, Division of Legislative Services*

**May 8, 1997**
**General Assembly Building, Richmond**
Options for Students Subcommittee report: Senator Emily Couric, chair, and co-chair, Robert Meredith, and members of the subcommittee; Testimony About Effects of the Proposed Standards of Accreditation on Students: Dr. Ron Ely, *assistant superintendent, Washington County Public Schools*; and Dr. Ned Carr, *director, New Horizons Governor's School, Newport News,* and two students

**June 12, 1997**
**General Assembly Building, Richmond**
Consequences and Accountability Subcommittee report: Alan Wurtzel, chair, and Senator John Chichester, co-chair, and subcommittee members; Briefings from chairpersons of legislative subcommittees and commissions: Delegate Julia Connally, *Joint Subcommittee to Study the Remedial Summer School Program*; Delegate Jean Cunningham, *Subcommittee to Study the Status and Needs of African-American Males in Virginia*; Delegate Mary Christian, *Joint Subcommittee to Study the Educational Needs of Underserved Gifted Students*; Delegate Frank Hall, *Standing Subcommittee on School Dropout Prevention*; Delegate William Robinson, Jr., *Dr. Martin Luther King Memorial Commission*; Delegate Jerrauld Jones, *Commission on the Impact of Certain Federal Court Decisions on the Commonwealth's Institutions of Higher Education*; Summary of plan of action from the Steering Committee: the vision and mission for public education

**July 10, 1997**
**Library of Virginia, Richmond**
Presentation of the Uses of Time in Public Schools: Dr. Lynn Canady, *Professor, Department of Education Leadership & Policy Studies, Curry School of Education, University of Virginia*; Vision for Public Education in the 21st Century and Beyond, Delegate W.W. Bennett, *chairman*; Review of Subcommittee Priorities: Support for Teaching and Learning--Delegate Linda Puller and Hugh Stallard; Teaching and Learning--Delegate W.W. Bennett, *chairman*; Options for Students--Senator Emily Couric; Consequences and Accountability--Alan Wurtzel; Recommendations to the Commission: Delegate W.W. Bennett, *chairman*

**October 9, 1997**
**General Assembly Building, Richmond**
Presentation from the Virginia Association of Elementary School Principals: Rebecca Harvey, *President,* and Tom Hanisch, *President-Elect*; Discussion of the First Draft of the Report: Delegate W.W. Bennett, *chairman,* and Commission Members

**November 13, 1997**
**General Assembly Building, Richmond**
Review of the Draft Report: Delegate W.W. Bennett, *chairman*;

**December 11, 1997**
**General Assembly Building, Richmond**
Review of Cost Estimates; Determination of Priority Recommendations; and Adoption of the Report: Delegate W.W. Bennett, *chairman,* and Commission Members

## PUBLIC HEARINGS

Tuesday, October 15, 1996--7:00 p.m.
Wise Vocational-Technical Center, Wise County

Tuesday, October 29, 1996--7:00 p.m.
Lake Taylor High School, Norfolk

Wednesday, October 30, 1996--7:00 p.m.
John F. Kennedy High School, Richmond

Wednesday, November 6, 1996--7:00 p.m.
Halifax County High School, Halifax

Tuesday, November 12, 1996--7:00 p.m.
Harrisonburg County High School, Harrisonburg

Wednesday, November 13, 1996--7:00 p.m.
Falls Church High School, Falls Church

Wednesday, December 11, 1996--7:00 p.m.
Northside High School, Roanoke

Wednesday, November 13, 1997--3:30 p.m.
General Assembly Building, Richmond

Monday, November 17, 1997--7:00 p.m.
Bethel High School, Hampton
George C. Marshall High School , Falls Church
Northside High School, Roanoke

# Appendix C

# Report of the Teaching and Learning Subcommittee to the Virginia Commission on the Future of Public Education April 10, 1997

## Members

Delegate Ted Bennett, *Chair*
Dr. Bill Bosher, *Co-Chair*
Dr. Jerry Benson, *VA Association of Colleges of Teacher Education*
Del. Flora Crittenden, *Newport News*
Dr. Bill Haver, *VA Mathematics and Science Coalition*
Cheri James, *VA Education Association*
Bill Lalik, *VA Association of Elementary School Principals*
Dr. Dick Lewis, *VA Association for Supervision and Curriculum Development*
Dr. David Mott, *VA Educational Research Association*
Jean Shackelford, *VA Music Educators Association*
Joan Spence, *VA Council on Economic Education*
Dr. Stephen Staples, *VA Assocation of School Superintendents*

The Board of Education has taken bold positive steps to improve public education in Virginia. In setting high academic standards , the Board has raised expectations of what our students can accomplish in school. A rigorous assessment program is being designed to ascertain how well students have learned this content-rich curriculum. Proposals to accredit schools on the basis of students' performance are focused on placing accountability for results with students, their parents, teachers, administrators, and local governing officials. These steps are moving public education in Virginia in the direction of assuring that all students have a strong basis in content knowledge.

These are the necessary and essential first steps to place Virginia's education system in the forefront. But they alone are not sufficient for the future demands of society, the workplace and higher education. Real world demands call for more for our children.

Looking into the next century, this subcommittee has asked where our system needs to go to meet the demands of life and work for our children in the future. How can we serve the needs of all students to be prepared for employment and further education? How do we build on present programs and proposals?

Our answer is that the next logical step is the application of knowledge. Application of knowledge takes place when students are asked to use, apply, create, or transform the knowledge

they have gained. Evidence is provided of what the student can do: the student takes what has been taught, transforms it, and makes the knowledge his or her own. Teachers provide learning experiences for students that enable them not only to acquire knowledge, but also to use it.

We are not talking about making a big leap into the unknown. Until the early 1800s most people learned in real-life, on-the-job situations, making sense of what they were doing by learning all parts of it. As industry developed, assembly line production called for many persons who could do a limited range of functional skills.[1] Content knowledge became abstracted from its concrete applications as these societal changes occurred.

We are not blaming schools or educators. They have done exactly what we have asked them to do. Education developed a sorting and selecting system where students are tested and classified according to their ability to memorize information, and to a lesser degree, analyze it. Students who are good at these things are labeled smart; others are weak or slow.[2]

We recognize that now is the time to bring a better balance between knowledge and application to the education system with the aim of improving the opportunities that all our children have for success in their adult lives.

**Subcommittee deliberations.** During our fall meetings we heard from 13 different individuals or groups[3] who encouraged the Commission to include the application of knowledge in its vision for public education.

Some of them have encouraged us to recognize that the workplace is changing. Milton Goldberg of the National Alliance of Business told the Commission in October, "Advanced technology, increasing globalization of the marketplace, and the spread of the "high performance" workplace require more advanced skills such as problem solving, advanced math and science, and computer skills."[4]

This subcommittee will present a case for teaching the application of knowledge and will share our considerations for building the capacity of the system to support the changes undertaken by the Board of Education and those we ask you to consider.

## Why should students be able to apply what they know?

One doesn't need to go far to find support for teaching the application of knowledge. In the Standards of Quality, Standard 1 states

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1 Abbott, J. (1997). *To Be Intelligent.* Alexandria, VA: Association for Supervision and Curriculum Development.

2 Sternberg, R. (1997). "What Does It Mean to Be Smart?" *Educational Leadership,* March 1997, pp. 46-51.

3 Students from the Young Scholars Program, Virginia Commonwealth University; Dr. Milton Goldberg, National Alliance of Business; John McIlroy, Virginia Manufacturers Association; Jerry Miller, American College Testing; John Axselle, The Opticom Group; Dr. James Hoerner, Virginia Tech; teams of teachers and administrators from Gloucester High School and William Byrd High School in Roanoke county; Dr. Chris Pipho, Education Commission of the States; Dr. Margaret Cozzens, National Science Foundation; Dr. Bill Haver and Dr. Reuben Farley, Virginia Math-Science Coalition; Cheri James, Virginia Education Association; Kris Amundson, Virginia School Boards Association; and Gene Bottoms, Southern Regional Education Board.

4 Milton Goldberg, October 10, 1996 Commission presentation.

*B. The Board of Education shall establish educational objectives to implement the development of the skills that are necessary for success in school and for preparation for life in the years beyond...*

*The Board shall seek to ensure that any revised educational objectives are consistent with the world's highest educational standards...These objectives shall include, but not be limited to, basic skills of communication, computation and* ***critical reasoning including problem solving and decision making,*** *and the development of personal qualities such as self-esteem, sociability, self-management, integrity, and honesty...*

*C. Local school boards shall develop and implement a program of instruction for grades K through 12 which emphasizes reading, writing, speaking, mathematical concepts and computations, and scientific concepts and processes; essential skills and concepts of citizenship, including knowledge of history, economics, government, foreign languages, international cultures, health, environmental issues and geography necessary for responsible participation in American society and in the international community; fine arts and practical arts: knowledge and skills needed to qualify for further education and employment or, in the case of some handicapped children, to qualify for appropriate training; and* ***development of the ability to apply such skills and knowledge in preparation for eventual employment and lifelong learning.***

Concern about the performance of our high school graduates provides the primary reason for reexamining the direction of public education. Results on international assessments for U.S. students show that we fall below the world average in math at the 8th grade, according to the Third International Mathematics and Science study released in November 1996.[5]

In the high school graduation rate Virginia ranks 30th in the nation in the percent of high school graduates as a percent of students entering ninth grade 4 years before. We rank 38th in the percentage of heads of households with at least 12 years of education.[6]

For the most part we continue to define excellence in American schools exclusively by what students need for college. This is important, but it is simply not enough.[7]

**The changing workplace.** Business has called for public school graduates to have a higher and different level of skill than is being emphasized in schools today. Reading is important in the 70% of jobs considered skilled. On the job people read technical manuals, safety codes, tax forms, not poetry or novels.[8] We are moving in the right direction here. The new English Standards of Learning incorporate technical reading and writing into the curriculum along with

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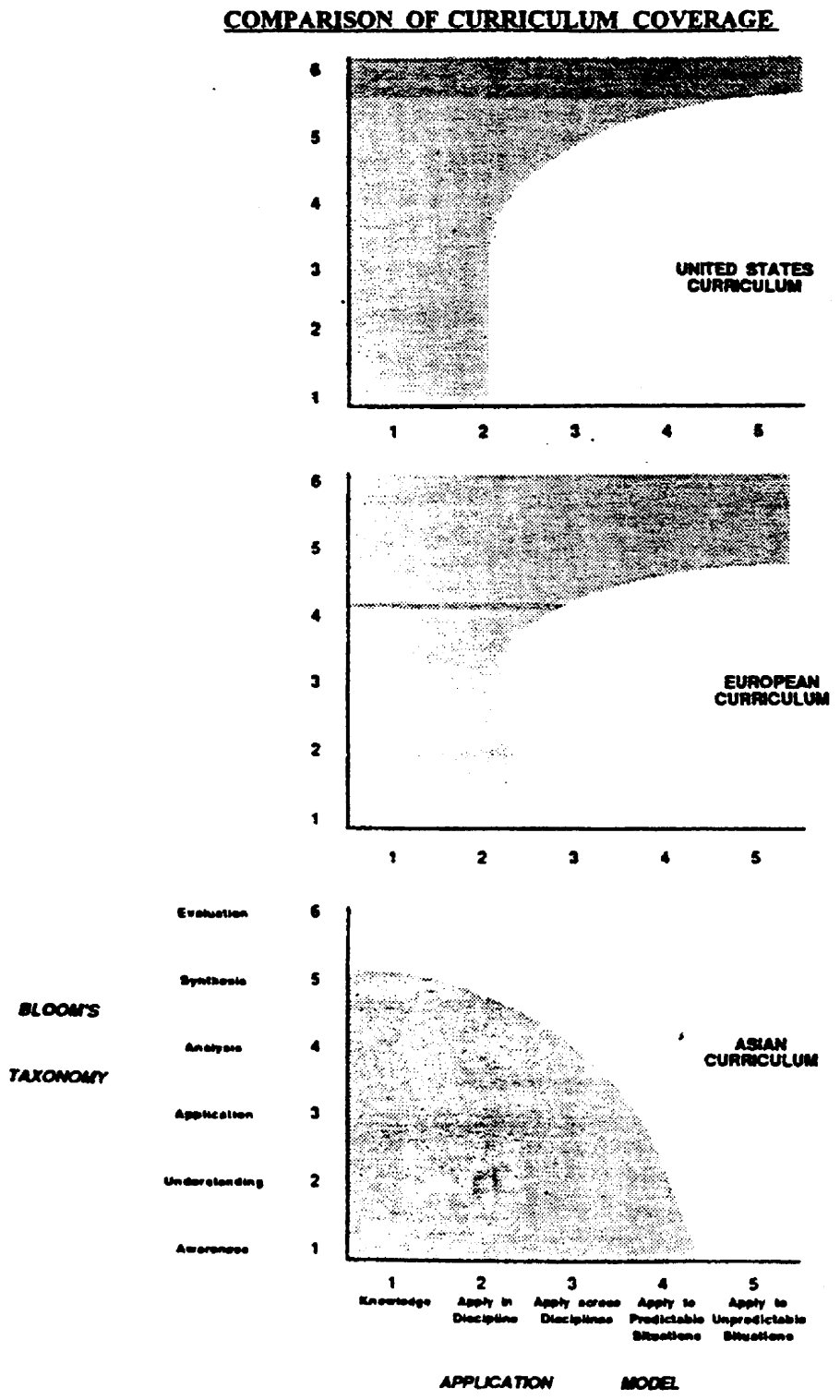
5 U.S. Department of Education. (1996). *Pursuing Excellence: A Study of U.S. Eighth-Grade Mathematics and Science Teaching, Learning, Curriculum, and Achievement in International Context*, NCES 97-198. Washington, D.C.: U.S. Government Printing Office.

6 Corporation for Enterprise Development. (1996). *The 1996 Development Report Card for the States: Economic Benchmarks for State and Corporate Decision-Makers*. Washington, D.C.: Author.

7 Daggett, W. (1996). "The Challenge to American Schools: Preparing Students for the 21st Century." *School Business Affairs*, April 1996, pp. 4-13.

8 Daggett, 1996, *op. cit.*

# Figure 1




Used with permission of the International Center for Leadership in Education, Inc. Reproduced from Willard R. Daggett, *Defining Excellence for American Schools* (Schenectady, NY: International Center for Leadership in Education, Inc., 1994), p. 39.

poems and novels.

The New Basic Skills each high school graduate needs include reading and math skills at the 9th grade level (with mastery of technical reading and fractions, decimals and line graphs); solving semi-structured problems by formulating and testing hypotheses; communicating effectively in writing and orally; working productively in groups with people of different backgrounds; and understanding how computers work and having the confidence and skill to learn how to use new software. [9]

Again, Virginia has recognized these demands and has provided some of these new basic skills in the revised Standards of Learning. In order to graduate, students will perform at the 11th grade level in reading and writing skills, and will master algebra and other high-level mathematics in the very near future. The new computer SOLs will ensure that students are familiar with the high technology which is a primary mode of work and communication in higher education and the workplace.

In the area of employment opportunity expanding most rapidly, workers need to be highly self-sufficient. Employment opportunities for workers in companies of 20 or fewer employees are rising at an astonishing 7.5 percent a year. Small businesses require workers to do many different tasks and to work a longer than average work day and work week. When a problem arises, the workers themselves have to solve it, often without procedures to follow or managers to assist them.[10]

We need to prepare all students for the dual post-secondary goals of employment and further education. Sixty percent of all jobs created by 2005 will require some post-secondary education, according to the Bureau of Labor Statistics.

**International comparison.** There are models for application of knowledge in curricula of other countries. Figure 1 compares the curriculum coverage of the United States, European and Asian countries. The Application Model, used in Asia and Europe, emphasizes how well a student can apply what he or she knows in the discipline, across disciplines, and in predictable and unpredictable situations.[11]

The U.S. curriculum excels in providing knowledge for knowledge's sake, as shown on Bloom's Taxonomy along the vertical axis. On the other hand, our curriculum does not emphasize application of knowledge beyond the discipline until one gets to the highest levels of critical thinking. Compare that performance with the European curriculum which surpasses our performance on the Application Model. The Asian curriculum emphasizes both Bloom's taxonomy and the Application Model at high levels. [12]

Daggett comments in *Defining Excellence for American Schools*,

> The implication of this information should be obvious. America needs to make a critical decision about what it means to be educated. Are we concerned simply with students moving up on Bloom's Taxonomy to higher and higher levels of knowledge in a

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9 Murnane, R. and Levy, F. (1996). *Teaching the New Basic Skills*. New York: Simon & Schuster.

10 Daggett, 1996, *op. cit.*

11 Daggett, Willard R., *Defining Excellence for American Schools* (Schenectady, NY: International Center for Leadership in Education, Inc., 1994), p. 39.

12 Daggett, *op. cit.*

subject, or should we also be concerned with their ability to apply the knowledge they have learned? The figures clearly show that American students are far behind in their ability to apply the information that they learn.

> ...As to which nation has the highest standards in the industrialized world, that is subject to interpretation. If we define standards by content knowledge that can be measured on knowledge-based, short-answer tests, the United States stands at the top of the list. If, on the other hand, we believe the ability to apply that knowledge beyond the classroom demonstrates the highest functioning, then America is at the bottom of the list. The study results raise a major question for Americans: Is the purpose of American education only to assimilate knowledge, or is it also to apply assimilated knowledge outside of school? (pp. 43-44)

**Public expectations.** What does the public expect that we are doing in schools? The International Center for Leadership in Education conducted a study in Michigan comparing what the public expects with what the curriculum provides. The current curricula were shown to be low on the Application Model, but high on Bloom's. Public expectation of what high school graduates need to know and be able to do is just the opposite -- high on applications.[13]

When we place our lackluster performance for most high school graduates in juxtaposition with the demands of the current and future workplace and our competitors around the globe, it is clear that we need to adjust the education system to improve the overall educational achievement of all students.

## How do we teach the application of knowledge?

We know more about how children learn now than we did 10 years ago, but generally, we are teaching the same way we were then: using the "tell, text, test" method.

The basis for good teaching is combining an information-rich subject matter with an experience-rich context of application.[14] Our new SOLs set in place the information-rich content knowledge. What we need is to ensure that the content knowledge and the ability to apply that knowledge are taught through a variety of methods.

A study of 8th-grade mathematics and science teaching following the Third International Mathematics and Science study in 1996 showed that using methods that encourage application do not necessarily result in high learning. High-quality content is a requirement for significant achievement.

> The majority of teachers cited examples of hands-on math or cooperative learning, which are techniques included among the [mathematics curriculum] reform recommendations. However, these techniques can be used either with or without engaging students in real mathematical thinking. In fact, the videotape study observed many examples of these techniques being conducted in the absence of high-quality mathematical content.[15]

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13 Daggett, *op. cit.*

14 Parnell, D. (1996). "Cerebral Context," *Vocational Education Journal*, March 1996, pp. 18-22

15 U.S. Department of Education, 1996, *op. cit.*

To encourage the application of knowledge in schools, connections are made between subject matter content and how it is used in real-life situations. Subject matter disciplines are related between and among each other, so that students understand their connections. School learning experiences are connected with other life experiences, and knowledge itself is connected to real situations.

Teaching methods are designed to have students grasp the whole task or concept and relate it to their past experiences and to potential use in the future.[16] An important consideration in selecting the appropriate teaching method is understanding how students learn and their preferred learning styles.

Applied Learning , a method of integrating academic and vocational education, is a powerful model for students to learn by doing meaningful work. Applied learning is actively student-oriented, characterized by lively classroom discussions, absorbing group projects, meaningful homework assignments, laboratory experiments, live and videotaped presentations, and other hands-on activities.[17]

The materials used are important; new math materials have been shown to be effective with all students. After the release of the National Council of Teachers of Mathematics Standards for Curriculum and Evaluation in 1989 the National Science Foundation funded the development of comprehensive mathematics instructional materials for all grade levels. Field testing in diverse settings with diverse teachers was a requirement for funding. The student achievement data from the field tests shows remarkable growth in students' understanding in mathematics and success among all populations.[18]

In Philadelphia where new 9th grade mathematics instructional materials, the Integrated Mathematics Program (IMP), were used, student achievement improved by an average of 20 points in English, science, and social studies as well. The only variable to change was the mathematics class materials. Results of the IMP pilot study showed that students in the application-based math program achieved at higher levels than the students in the control group not only in math, but also in English, science and social studies.[19]

**Virginia examples.** To give a clearer picture of the kind of teaching and learning experiences the subcommittee favors, we have compiled examples from recent publications.

A. "Prime slime" describes a hands-on, real-world chemistry lab taught by Holly Hash at Bluestone High School in Mecklenburg county. Pursuing a formula for Halloween slime, two students created an edible plastic-like substance that bonds with wood, paper and glass. The discovery has changed their attitudes about their futures.

B. "A grand endeavor" reports on "Finding Home," the opera set in Jamestown in the 1620s written, directed, lit, and performed by 4th and 5th graders at Drew Model Elementary in

16 Bottoms, G., Presson, A., and Johnson. M. (1992). *Making High Schools Work Through Integration of Academic and Vocational Education*. Atlanta, GA: Southern Regional Education Board.

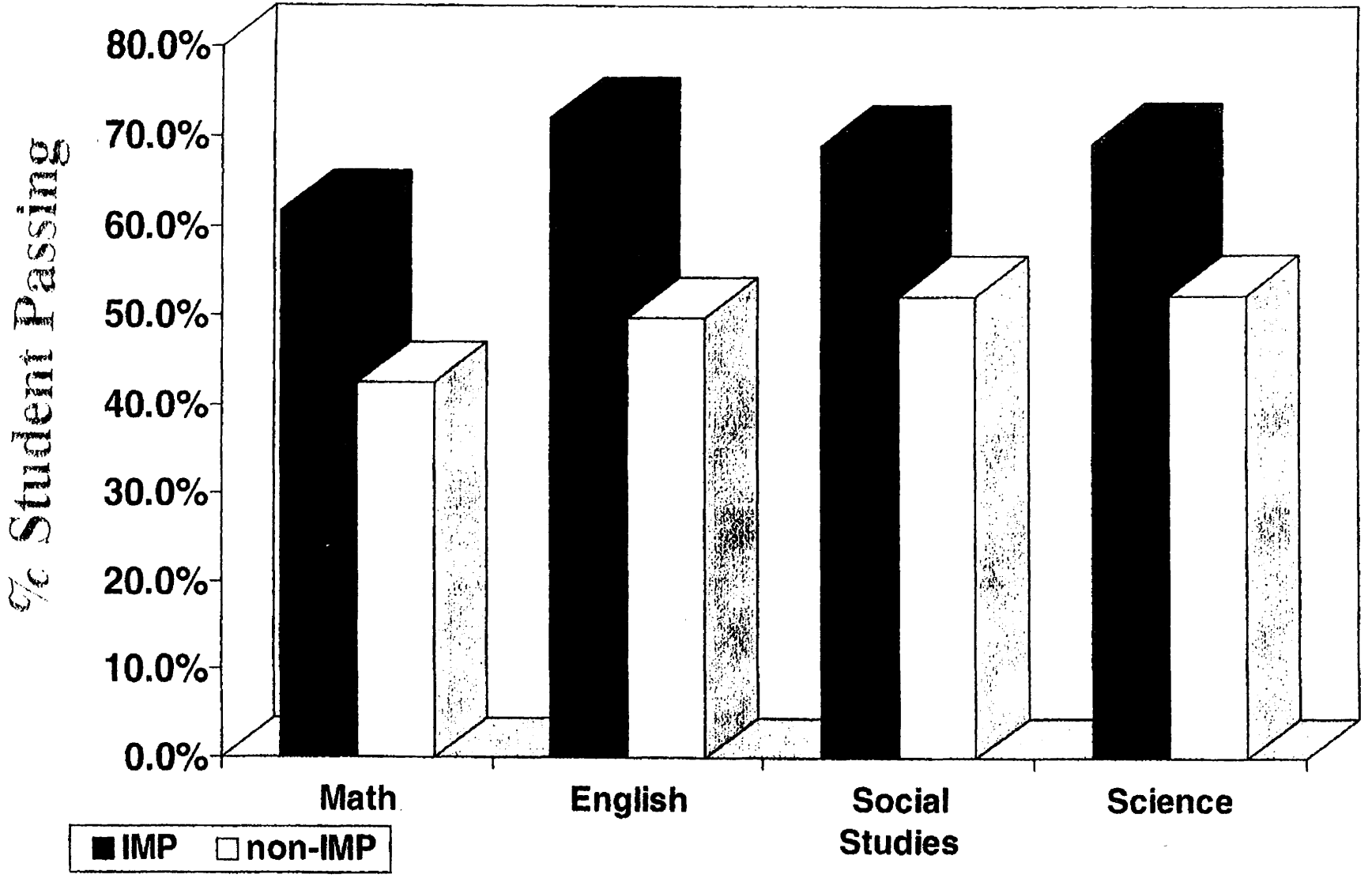
17 Bottoms, Presson, Johnson, 1992, *op. cit.*

18 Cozzens, M. Education for the 21st Century: Challenges and Perspectives. Paper presented to the Virginia Commission on the Future of Public Education, December 4, 1996 in Richmond, VA.

19 Cozzens, 1996, *op. cit.*

# Interactive Math Makes for Active Learners

## Final Grades for 1994-95 Academic Year




The students represented by this data are algebra-ready students. These students were randomly selected within and across charters in five comprehensive high schools: Bartram, Ben Franklin, Germantown, Gratz and Strawberry Mansion High Schools. (# of IMP Students = 333, # of non-IMP students = 3,083)

Arlington last fall. Being responsible for all parts of the show made students feel grown up. "It doesn't feel like you're in school. It feels like you're in charge," one student said.

C. "Professor makes math fun" describes George Rublein's Fear of Flying -- By the Numbers math class for non-math majors at William and Mary. Students have to do math the way pilots do. "It's a more attractive way of doing math because it's so concrete, because it's grounded in real phenomena," commented one student.

D. "Parent-run lab puts new spin on science" reports how parents at Short Pump Elementary in Henrico county have supplemented science instruction with labs on topic such as bugs, matter, and kitchen chemistry.

E. "Lesson is in the air" highlights a program sponsored by the Virginia Power Weather Center and the Richmond-area Mathematics and Science Center. Students take roles of community and school officials, weather forecasters, and power company technicians in a simulated weather crisis.

**Assessment.** Classroom and state assessments can influence what happens in classrooms. Assessments at each level that focus not only on acquisition of knowledge but also on students' ability to use their knowledge will encourage students to learn new skills and concepts and use them. As Dr. Cozzens said at our December 1996 Commission meeting,

> It is essential to ensure opportunities exist for all children to exhibit what they know and how they know it...We know that processes of understanding involve sets of performances -- carrying out analyses, making fine judgments, undertaking syntheses, and creating products that embody principles or concepts central to a discipline....It makes no sense to change materials and instruction and then measure performance using short, single process, single answer questions.
>
> Children in many other countries are better able to answer multistage problems that require thinking than U.S. children, probably because they have had more experience with problems of that type.[20]

The state assessment program is a critical component for changing the education system. If there is a commitment to move beyond knowledge recall, the education system must provide an incentive to school personnel to change their methods. The signal for change is in the structure and format of the state level assessments. If assessments of performance require actual demonstrations of the application of what students have learned, teachers will teach and students will learn not only the knowledge component, but the application component as well.

## What are the pressing system needs that must be addressed?

In addition to providing training to teachers for the application of knowledge, there is a critical need to increase the capacity of Virginia's public education system at this particular time.

**Standards of Learning.** New SOLs are in place with assessments to be implemented next year at grades 3, 5, 8, and 11. A December 1996 Department of Education study reported school divisions asking for assistance from the Department in providing professional development on the new SOLs. 132 school divisions responded to the survey. Specific assistance was

20 Cozzens, *op. cit.*

requested in a variety of formats:

77% of respondents suggested the VDOE hold additional workshops.
64% of respondents suggested the VDOE hold additional regional meetings, and
46% of respondents suggested the VDOE conduct onsite training.

The report continued,

> Staff in schools throughout the Commonwealth have a need for instructional resources to teach the standards. Professional development was also identified as a major area of need. The most frequently cited staff development needs were in the areas of core content, assessment information and classroom assessment strategies, instructional resources, and curriculum alignment.[21]

"The majority of teachers currently teaching mathematics and science in Virginia schools have not studied the math and science called for in the Virginia Standards of Learning at the grade level they teach," reported Dr. William Haver, executive director of the Virginia Math-Science Coalition.

"With appropriate preparation in learning the subject matter and how it can be taught, they are fully capable of helping Virginia students meet the standards. Without this support they will not be able to enable students to reach these standards."[22]

**Teacher development.** Over the last several years a number of promising programs designed to promote teacher professionalism have been dismantled, primarily for financial reasons. The Clinical Faculty program, Colleague Teacher program, Beginning Teacher Assistance program, Teaching Scholarship Loan program, and others were successful while they were being implemented, but were closed when state funding was not available.

The work of beginning teachers is extremely difficult. The subcommittee believes that attention should be paid to better induction of these new teachers into school life with support from mentor teachers and other special consideration for their needs during the first year or two of teaching.

But the professional development needs of experienced teachers should not be ignored. Pursuing Excellence, the TIMSS study report reminds us that

> Each year, the percentage of newly-hired teachers is comparatively small in relation to the size of the existing teaching force. Therefore, many experts agree that, in the short run, the quickest way to improve students' learning opportunities is to improve the instruction provided by existing teachers.[23]

There must be a system in place organized for teacher success. It should provide quality professional development for the continuous growth and development of all teachers. It should provide rewards for knowledge and skill, assistance for those who need to sharpen their skills, and

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21 Virginia Department of Education. (1996). *Status Report on Standards of Learning Implementation.* Richmond, VA: Author.

22 Personal communication, April 9, 1997.

23 U.S. Department of Education, *op. cit.*

a mechanism for the removal of the small percentage of those for whom assistance fails to result in necessary improvement.

**Research and evaluation.** At the present time there is no coordinated research effort in Virginia to identify successful instructional models, exemplary practices, or cases where unusually high achievement has been accomplished with at risk students. Because of funding constraints, a budding effort at research and evaluation at the Department in the early 1990s was eliminated. There is a critical and on-going need to find successful programs and disseminate their methods to others with similar teaching situations.

The subcommittee believes that every school and classroom can become a center for high-level teaching and learning. We recommend the following actions to build the capacity of the system to produce well-rounded, educated young people ready to work, to further training or education.

## What will it take to build the capacity of the system?

Building system capacity to support the work begun by the Board of Education and continued by the Commission on the Future of Public Education will be addressed by several subcommittees. The Support for Teaching and Learning subcommittee addressed the all-important issue of time last month.

We are aware that this is the time for the Commission to look at as many possibilities as it can; therefore, we have brought you a full array of considerations. As we present options to the Commission, we are aware that you will find some of them familiar. Some of these ideas are similar to programs that are no longer funded, recommendations of other groups, and provisions that are already in law. We feel, however, that these concepts need to be reexamined, perhaps revised, possibly reestablished.

## Considerations for Improving Learning

We can improve learning if we focus on the revision of the Standards of Learning and its assessment program.

### 1. Standards of Learning

Virginia's Standards of Learning should reflect a balance between content knowledge and the application of knowledge. As the 1995 SOLs in English, mathematics, science and history-social science are revised, subject matter content experts should be consulted for recommended changes. Revisions of other subject matter Standards of Learning should be undertaken with the understanding that a balance between knowledge and application of knowledge will be achieved.

### 2. Standards of Learning Assessments

The SOL assessments should measure application, critical thinking, problem solving, and decision making as well as knowledge of content. As the assessments are revised, performance tasks should be developed and administered to provide a state-level report of students' ability to apply what they have learned.

### 3. Teacher Involvement in Revisions

The process for the eventual revision of the 1995 SOLs, the earlier SOLs in non-core subjects, and the SOL assessments will include classroom teachers who are recognized as experts in their subject area as members of the revision teams. They will be responsible for providing training on the revised documents to colleagues in their schools, school divisions and regions.

## Considerations for Improving Teaching

Our thoughts for improving teaching focus on the preparation and professional development of Virginia's teaching force. They fall on a continuum that moves from **teacher education** to **early professional development** to **on-going professional development strategies.**

### 4. Clinical Faculty Program (Teacher Education)

This program provides classroom teachers the training to supervise and support student interns nearing the end of their formal teacher training programs. The program has included compensation, recognition of the clinical faculty as faculty of the institution of higher education, close coordination between the teacher education program and public schools, and a strong evaluation component.

### 5. Base Technology for Teacher Education Programs (Teacher Education)

Grants should be made to the institutions of higher education with approved teacher education programs to purchase hardware and software necessary to ensure prospective teachers possess the technology competencies required for teachers and knowledge for application of technology in instruction.

### 6. Assistance for Beginning Teachers (Early Professional Development)

Beginning teachers come to their first jobs not fully prepared, not finished. Support for them is extremely important. The subcommittee suggests a mentor teacher program to provide on-going support from an experienced colleague teacher, an internship, performance-based assessment, and probationary license as proposals that can make the difference between a successful or an unsuccessful first year in the classroom.

### 7. Research and Evaluation Clearinghouse (On-Going Professional Development)

A research and evaluation clearinghouse is needed to support the professional development of Virginia's teaching force. Excellent programs go unnoticed now, because there is no systematic way of identifying them, gathering and analyzing data about their results, and sharing the findings with others who need it. As schools establish performance records on the SOL assessments, some will require assistance in improving student performance. The work of this clearinghouse will be to identify best instructional practices, materials, and assessment and assist with dissemination.

### 8. Regional Professional Development Centers (Early and On-Going Professional Development)

To assure that quality professional development is available in every part of the state, the subcommittee recommends that professional development centers be located in each of the Superintendents' Regions. Using information developed in the research and evaluation clearinghouse, the centers would provide training and demonstration in all professional development topics, computer technology, and would provide technical assistance to schools where student achievement is not improving.

### 9. Intensive Teacher Training (Early and On-Going Professional Development)

The subcommittee is convinced that students can meet the high standards called for in the new Standards of Learning. However, many teachers are not prepared to teach the subject matter called for in the standards. Particularly in math, science, and computer technology, they have not studied these subjects themselves. In addition, teachers need training in how to teach all subjects in ways that students can understand and apply what they learn. The subcommittee recommends an intensive training program on these topics to be implemented over a 3-5 year period.

### 10. Lead Teachers in Math and Science (Early and On-Going Professional Development)

The SOLs in math and science at the elementary and middle school level are considerably more rigorous than their predecessors. Many teachers at these levels have not had much course work in either math or science, and assistance is needed to provide them with background information, laboratory experiments, and other instructional support.

The subcommittee recommends phasing in over 8 years a program of training Lead Teachers in mathematics and science to support their colleagues at the building level.

### 9. Approval of Teacher Education Programs

Every teacher education program must be accredited by a state or national accrediting agency. A viable program approval process at the state level must be developed and implemented.

### Other Recommendations

The subcommittee offers other recommendations to build the capacity of the system to sustain improved teaching and learning everywhere in the state.

- Support for the Future Educators of America, a high school program that identifies students interested in teaching.
- Support for the Teaching Scholarship Loan program, providing financial assistance to teacher education students.
- A viable teacher education program approval process at the state level needs to be developed and implemented.
- The establishment and administration of professional standards for the preparation and licensure of educators is a crucial element in providing quality teachers for every classroom and a quality education system in the Commonwealth. The governance and operation of a system to set and oversee such standards warrants study and recommendation.
- The state should continue to support experienced teachers in seeking National Board Certification, by providing assistance with the application fee and recognizing their achievement when they have successfully completed the process.

## Conclusions

The subcommittee believes that implementing its recommendations will have the following effects:

- Students will be more interested in school work, and they will attend more regularly with better behavior.
- Graduates will be better prepared to enter the world of work and they will be more productive on the job.
- Students will be able to make better career and life choices.
- Better prepared graduates will be a contributing factor to a more robust economy.

We believe that the Commission's vision and mission for public education, and the strategic plan for implementation must result in gains in achievement, learning, and performance of all students, or they have failed. These recommendations have the potential to drive us in the right direction: an enhanced public education system for the entire Commonwealth of Virginia.

# Prime slime

## *Money maker or ego booster, two students find the right recipe*

BY JAMIE C. BUFF
TIMES-DISPATCH STAFF WRITER

3/16/97

Marriage proposals, national media attention and dreams of millions arose from a science accident that befell high school students Justin White and Gus Gray.

The 16-year-old juniors at Mecklenburg County's Bluestone Senior High School stumbled onto something their chemistry teacher says is a new compound with unique properties.

It's clear and looks like plastic. It doesn't dissolve in water, but it does dissolve in saliva — and that means it's edible.

Placed in the palm of your hand, it squirms, curls and folds. But it acts like a clear laminate on paper or glass.

"It's great. It's kind of hard to believe," White said. "I'm hoping it doesn't fall through."

The young inventors don't want to reveal the ingredients of their concoction because they hope to get a patent.

"I can tell you it's got proteins in it," chemistry teacher Holly Hash said.

The students are trying to discover as many uses as possible for the clear ooze. The possibilities include:

- a covering for gel caps;
- a sealant for cracks in wallboard;
- a diet snack, (it has no fat and is full of proteins);
- a fishing lure, (it feels like a salamander when wet);
- a paper laminate;
- or a new sort of safety glass.

White and Gray stumbled across the compound as they were trying to make green slime to cover the classroom door shortly before Halloween.

After several trials, the boys decided they had achieved their goal. They mixed the ingredients, poured them into a flask and placed it over a hot plate to boil.

> *"It really shows you what can happen in a rural school system when a good teacher and enthusiastic students come together."*
>
> WILLIAM CHAPMAN
> SUPERINTENDENT, MECKLENBERG COUNTY SCHOOLS

But the mixture heated too quickly and the flask broke, splattering the hot substance inside the fume hood. The boys cleaned up their mess and returned to making a new batch of slime.

The next day, as Hash checked the fume hood to see how well the boys had cleaned up, she discovered a container left from an unrelated experiment that had been coated by the splattered slime. When the teacher picked up the container, she noted that the material had some unique properties.

It began to curl and wiggle.

White and Gray immediately started trying to re-create the substance they had discovered by accident.

"They tried it a dozen times after that," Hash said. "It didn't work."

Finally, they realized the slime must have chemically combined with the residue from a previous experiment in the container. That proved to be the missing piece in the ooze puzzle.

"The catalyst is just something that is totally unexpected," Hash said. "Nobody would ever think to put that in it."

They have since spent three months perfecting the compound and streamlining the preparation process. They have reduced the time it takes to produce a batch to one hour. Before it took two hours to prepare the ooze, and all night for it to dry.

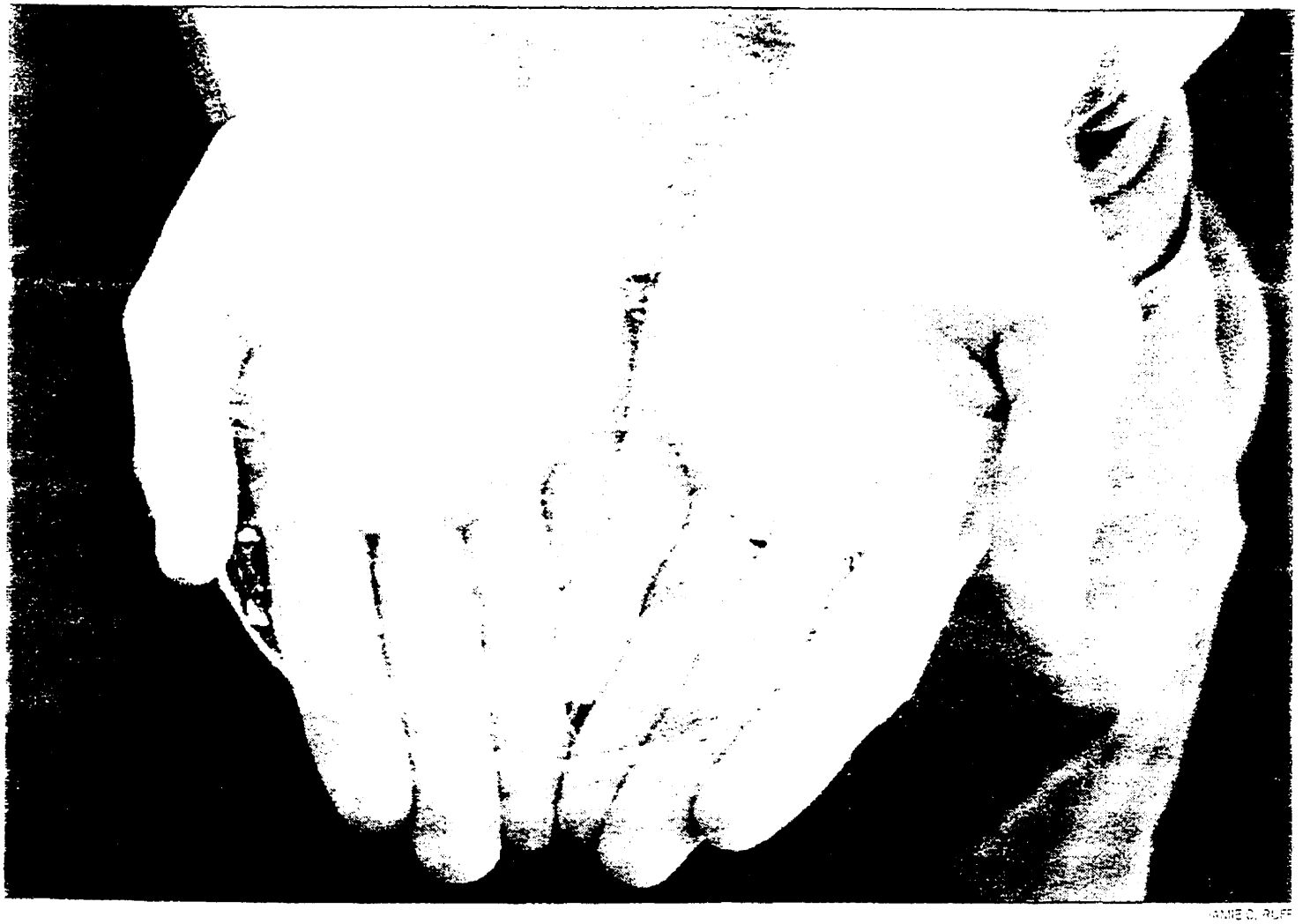
They have demonstrated their discovery for the county School Board and Superintendent William Chapman. Their newfound fame has brought them marriage proposals from previously disinterested classmates, and has drawn the attention of The Wall Street Journal and The Associated Press. CNN is expected to come to the school Tuesday.

While some have suggested the mystery ooze might be worth a fortune, the boys aren't setting their hopes too high.

"I think the most these guys are planning to get out of this is some scholarships," Hash said. "I think the most I would hope is some corporation would take pity on us and donate some funds."

The three also are hoping that all the attention will help them find out if the compound is indeed new, or had already been created b

PLEASE SEE OOZE PAGE C4 ▸



JANNE D. RUFF

**WHAT IS IT? Two high school students discovered a compound that shakes like Jell-O and won't dissolve in water. But it is edible.**

# Secret of the slime well-kept

▼ **OOZE** *FROM PAGE C1*

someone else.

Hash, a former state chemist, is nearly hoarse from talking up her students and their discovery. She makes no secret that her intention is to give a boost to her rural school system.

"It's good for morale," she said. "These kids are out in the country and they don't [illegible] much. ... They feel special now."

It is a sentiment shared by school officials.

"It really shows you what can happen in a rural school system when a good teacher and enthusiastic students come together," said Chapman, superintendent of a 5,040-student system that is among the state's lowest in per pupil expenditures.

The discovery and the attention it is generating is reward enough, Principal Dave Francis said.

"If nothing else, it's given them some career opportunities."

Raphael Ottenbrite, a polymer chemist at Virginia Commonwealth University, said it is unique for high school students to make such a discovery.

"To be able to manipulate [chemicals] to come up with something new like this, at their age, with their competence, is great," Ottenbrite said. "I encourage them to continue, no matter where it takes them ... financially. It's going to take them lots of places intellectually."

While neither of the young inventors had planned to pursue a chemistry degree in college, both Gray and White now say the prospect holds some appeal.

"If it becomes big and something we'll probably go into science," White said.

"Just so we can run our experiments better," Gray added.

LINDY KEAST RODMAN/TIMES-DISPATCH

**LESSONS. Parent-teacher Suzanne Hanky conducts the Behavior of Molecules lab for pupils at Short Pump Elementary.**

**ENGROSSED. Short Pump fifth-grader Bradley Weed listens during the Measuring Matter workshop conducted by parent-teacher Sue Tognarelli.**

# Parent-run lab puts new spin on science

## *Experiments make learning fun, pupils say*

3/4/97

**BY JANET CAGGIANO**
TIMES-DISPATCH STAFF WRITER

What is the densest thing in the universe?

A brick wall, you say? A piece of metal?

Wrong.

The densest thing in the universe is a black hole. It's so dense even light can't escape its pull.

This question is one that many students at Short Pump Elementary School can use now to stump their friends.

"I'm learning so many interesting things," said Laura Reed, a fifth-grader. "Now, science is a lot more fun to me."

Her interest peaked last year when the school set up ExploreLAB. The lab, which is run by parent volunteers throughout the school year, introduces children in grades kindergarten through five to topics such as bugs, matter, magic, kitchen chemistry, rainbows and color.

Instead of giving children reading assignments or drawing charts on the blackboard, parents hand out goggles and lab coats to pupils. The children set up and do their own experiments.

In a recent lab on matter, pupils filled balloons with baking soda. They attached the balloon to the top of a plastic bottle that contained water, emptied the balloon and watched as the baking soda combined

*PLEASE SEE* **SCIENCE**, *PAGE* **B6** ▶

# Parent-run lab gives hands-on experience

▼ **SCIENCE** *FROM PAGE B1*

with the water to produce a chemical reaction. The water bubbled and the balloon filled with air.

Pupils later watched as a coiled piece of metal was straightened by heat. They were stumped that a peeled lemon sank when placed in water but a lemon with its peel floated. Air pockets in the peel provided buoyancy similar to a life jacket.

"This is so much better than reading about it in a book. That's kinda plain," said Jim Tartaglia, a fifth-grader. "Once you do it yourself, though, it becomes much more interesting."

The ExploreLAB, which in November won an Excellence in Education Award from Virginia Tech, started at Short Pump in September 1995. Two parents, Lynne Still and Debbie Trainer, had heard about a similar lab at Maybeury Elementary School.

Since both have a background in science, they decided to head the efforts at Short Pump.

"Elementary school teachers have so much they have to cover with verbal and math, that sometimes these other things fall by the wayside," said Still, who has a master's degree in microbiology. "We want to help and show students they can learn so much by doing."

The two parents, who both have two children at Short Pump, set up three different labs throughout the year. Each lab is held for seven weeks so each class can visit for one hour.

Since the school has so many labs, Still and Trainer knew they would need plenty of help. Since 1995, more than 300 parents have volunteered to run the labs.

LINDY KEAST ROOMAN/TIMES-DISPATCH

**EXPERIMENTING. Parent-teacher Marty Thornhill watches students conducting an experiment during the Physical and Chemical Change workshop.**

"We thought if we could get a handful of volunteers, we would be lucky," said Trainer, who has a doctorate in pathology. "It has been great to have this many. Those who do it once come back. That means they are excited about it."

Many take time off from work to volunteer in the lab. They help pupils run the experiments, explain the results, ask questions and give answers.

"When I was in school, science was one of the drier subjects," said Marty Thornhill, a lab volunteer who has two children at Short Pump. "Now, we are bringing science alive for them. They can see firsthand how it affects their everyday life."

Children aren't the only ones learning.

"I find myself learning a lot," said Suzanne Hanky, another volunteer. She has two children at Short Pump. "These are topics that are relevant."

> *"This is so much better than reading about it in a book."*
>
> **JIM TARTAGLIA**
> FIFTH-GRADER AT SHORT PUMP ELEMENTARY SCHOOL

Most parents who volunteer come to the labs that their children are attending. The pupils don't seem to mind.

"It's sort of weird sometimes," said Kathleen Vinson, whose father, Ken, volunteers regularly. "I feel like he's watching everything I do. But it's nice, too. He gets to be here to help me learn."

Next year, Still and Trainer won't be around to run the ExploreLAB because their children will attend the new elementary school. They hope to start a similar lab there.

"We want to make science absolutely fun for children," Trainer said. "Science is not always the chosen career for a lot of people. By the time many have their first lab experience, their attitude toward science is already formed.

"If we can reach the children early on and show them that science can be fun, we can change that attitude. For me, that is so rewarding because we are helping influence children."

# Lesson is in the air

## *Regional school, Virginia Power join to teach weather*

3/27/97

BY PETER BACQUÉ
TIMES-DISPATCH STAFF WRITER

Urged on by the powerful voice of George Hastings, better known as "Commander Hastings of National Weather Center Control," nine Hanover County students stuffed themselves into a square marked on the carpet.

He started to toss colored balls toward them. The eighth-graders grabbed and jumped for the balls, and fell out of the square.

"Check it out!" said Hastings, wearing a Star Trek-esque red jumpsuit.

"We added heat energy, and there was no way they could all stay together," he explained, making one of the day's major educational points. "So temperature and pressure are related."

In its first year of operation at the Mathematics & Science Center, the Virginia Power Weather Center aims to teach pupils about the basic concepts — air temperature, pressure and weather fronts — that are the building blocks of weather.

The Math & Science Center is a regional school operated by the public education systems in Richmond and the counties of Henrico, Chesterfield, Hanover, Goochland, King William and Powhatan.

As its name makes clear, the center in eastern Henrico specializes in mathematics and science programs for students, teachers and even a few parents.

"Helping elementary teachers better teach weather was a constant request," according to Julia Cothron, the Math & Science Center's executive director.

Virginia Power, the state's largest electricity company, has been involved with the Math & Science Center since 1985.

The firm "has a real commitment to the public schools," said spokeswoman Patty V. Campbell, "particularly math and science education," since students of central Virginia schools often are the utility's future employees. "The Weather Center seemed like a natural fit" for the company.

**WEATHER WIZARDS. Liberty Middle School eighth-graders Megan Valin (left) and Brody Wehman soak up the science lessons at the Virginia Power Weather Center.**

Virginia Power donated $150,000 to the the Math & Science Center for the high-tech science classroom.

The regional center's staff and meteorologists from Virginia Power worked together to design the program's lessons, as well as the classroom with its computer stations and teaching aids.

"We gave them a fair amount of instruction," said Todd Anderson, a meteorologist with Virginia Power, "and a little bit of a reality check."

More than 5,000 students are expected to visit the 900-square-foot Weather Center this year. When the program is up to full speed, close to 10,000 regional elementary school pupils will go through the program annually, Cothron said.

"This is not just a field trip," she said. "It should be a part of their curriculum."

Before teachers from the region's schools bring their charges to the center for the weather classes, they receive two and a half hours of training in the center about weather and energy.

Students in the fourth through eighth grades take the two-hour lesson on weekdays. When they leave, their teachers take a kit with specialized equipment to use in weather science courses.

"It's a very motivating 'opener' to the meteorology unit we're doing," said Pat Viers, whose 23 eighth-graders came to the center from Liberty Middle School in Hano-

*PLEASE SEE* **WEATHER**, *PAGE* **E3** ▶

ver.

Virginia Power's center "also demonstrates how individuals and groups within the community work together to monitor weather conditions and respond to emergencies," Cothron said.

The Weather Center is, in effect, a simulator, where the students play the roles of community and school officials, weather forecasters, power company technicians and even reporters dealing with severe weather.

"We hope to take some lightning data and some satellite and radar data," Anderson said, "and integrate that historical weather data, and apply that to what the kids see."

Using weather maps, satellite images and computers — the students' password is "THINK" — they track a storm's progress and decide on a course of action to deal with damages and hazards.

On this day, the students acting the part of a school transportation system were late sending information on storm-affected bus routes to the mock television station.

As the television newscasters looked up in confusion, Hastings pointed out the real-world result of such a failure: "Well, then the school bus information can't get on the air."

With video of an actual thunderstorm pummeling the Math & Science Center, film of tornadoes and the recorded sounds of thunder, rain and wind, the Weather Center produces a virtual storm near the lesson's end.

Squatting on the floor in the "safe area" in the middle of the room, the students huddle from the tornado's fury.

"Boy," one said emphatically, "that was scary."

The simulation of a raging storm is lifelike enough that the fourth- and fifth-graders are regularly surprised when they leave the classroom and find the sun shining and the ground dry.

MARK GORMUS/TIMES-DISPATCH

**TOO MUCH ENERGY. To teach the relationship between temperature and pressure, George Hastings tosses colored balls to students confined on a carpeted square. In their enthusiasm to make the catch, they often fall across the line.**

# REPORT OF
# THE SUBCOMMITTEE ON OPTIONS FOR STUDENTS
# To
# THE COMMISSION ON
# THE FUTURE OF PUBLIC EDUCATION IN VIRGINIA

**MEMBERS**[1]

The Honorable Emily Couric, Chair
Robert L. Meredith, Co-Chair
Les Black
Mary Etta Brown
The Honorable Flora D. Crittenden
Robin DeJarnette
William D. Hansen
Dianne L. Mallory
F. Robert Newman
The Honorable Beverly H. Sgro
Thomas W.D. Smith, Jr.
Suzanne Yenchko

## SUBCOMMITTEE'S CHARGE

Pursuant to HJR 196 of 1996, the Commission on the Future of Public Education has been charged with developing, consistent with the Constitution of Virginia, "**a vision for public education . . . and a strategic plan for accomplishing the vision and mission of public education.**" The strategic plan must include various components which have been, in whole or in part, assigned to this subcommittee. Thus, the subcommittee was directed to:

- Describe the current and future workforce skills and knowledge needed by high school graduates in the workplace;

- Correlate the objectives of the revised Standards of Learning with competencies needed for success in employment and postsecondary education; and

- Review the educational options and choices for students for career preparation.

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[1] **Technical Assistance Provided By:** Neils W. Brooks, Director, Office of Vocational and Adult Education Services, Virginia Department of Education; Brenda H. Edwards, Senior Research Associate, Education and Health, Division of Legislative Services; A. Elaine Fogliani, Executive Director, Southside Virginia Business and Education Commission; Kathleen G. Harris, Senior Attorney, Education, Division of Legislative Services; Norma E. Szakal, Senior Attorney, Education and Health, Division of Legislative Services.

In addition to those charges specifically outlined in HJR 196, the Commission directed the Options for Students Subcommittee to examine and determine the appropriateness of:

- Establishing an institute for industrial arts;

- Establishing full-time regional vocational education high schools; and

- Establishing other educational alternatives designed to improve students' career preparation and enhance educational choices.

The subcommittee examined some issues relating to each of its directives; however, during the course of the study, private employers strongly expressed concerns about the lack of communication with the public education system and dissatisfaction with the skills of entry-level employees. Influenced by these concerns, the subcommittee narrowed the emphases of its discussions to workforce preparation. The subcommittee believes completely in the role of elementary education in informing children about careers and instilling the work ethic. However, because vocational/technical education and career education take place primarily in secondary schools, the subcommittee focused on middle and high school options designed to teach the skills needed for life beyond high school.

## THE SUBCOMMITTEE'S WORK PHILOSOPHY

The subcommittee's intent is to contribute to the development of a widely accepted vision for public education in Virginia. With this foundation, the Commission and the Commonwealth can identify educational practices that will set our schools on the best course for the coming century.

With this goal in mind, the subcommittee determined, as its discussions progressed, that:

- All young people must exit high school with the knowledge and skills to allow them to exercise choices among the options of entering the workforce, obtaining postsecondary technical education or training, going on to college, graduate or professional school or combining these pursuits.

Thus, the subcommittee founded its work on the principle that:

- All students must be provided opportunities to reach their highest potential through effective K-12 educational options and that academic achievement and preparation for work are inclusive--not exclusive--concepts.

## THE PURPOSE OF PUBLIC EDUCATION

Although the subcommittee focused its discussion on the areas outlined in its charge, the members first sought to place its work in the larger context of the state's public education system.

Thomas Jefferson, the father of public education in this country, believed that the purpose of education is to render "the people safe, as they are the ultimate guardians of their own liberty." The Bill of Rights of the present Constitution of Virginia reflects this democratic ideal:

> That free government rests, as does all progress, upon the broadest possible diffusion of knowledge, and that the Commonwealth should avail itself of those talents which nature has sown so liberally among its people by assuring the opportunity for their fullest development by an effective system of education throughout the Commonwealth (Article I, Section 15).

Much of the current public discourse about education revolves around the purposes of public schools, specifically which purposes are the primary mission of our schools. The statement of this primary mission, or philosophy of education, directs decisions about curricula and instruction.

The four historic purposes of public education are held to be development of the intellect, transmission of the culture, development of basic literacy skills, and preparation for citizenship.[2]

In the 1950s, another purpose for public education emerged. Veterans from World War II returned with a new vision of the American Dream--obtaining a college education. The GI Bill provided many of these veterans the opportunity to pursue this dream. The dream did not, of course, end with the veterans. After World War II, many families wanted their sons and daughters to go to college.

The effects of the emergence of the dream of a college education can be readily seen in statistics on the Scholastic Aptitude Test (SAT). During the decade of the forties, 10,000 students, mostly white males, took the SAT. In 1995 alone, that figure had increased to over one million and included a demographically diverse population.[3] Thus, as the world progressed through the decades of the "Cold War" and the advent of global competition, preparation for college was added as a

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[2] Association for Supervision and Curriculum Development, A House Divided: Tradition Versus Change in American Education, 1995.

[3] The Daily Progress, Charlottesville, Virginia, May 19, 1995.

fifth purpose for public education, and many began to view college as the key to success in adult life.

No one would dispute that public education has provided millions of Americans with opportunities for better lives. Today, however, controversy still surrounds the purpose of public education, and different segments of our society hold different views.

Parents have generally viewed themselves and their children as the "clients" of public education and believe that the primary purpose of public education is to teach their children the skills necessary to attain a better quality of life. Educators have differing views about the primary purpose of public education, including preparing children for life, for example, to be good citizens, to get along with and respect each other, to go on to college, to enjoy intellectual pursuits, to enjoy and participate in the fine arts, and to get a job or pursue a career.

Some business leaders view themselves as the primary "customers" of public education and take the position that the primary purpose of public education is to serve the nation's workplace by producing employees with the skills to maintain a competitive advantage in the world market.

"There is growing national awareness," according to Anthony P. Carnevale, "that the competitiveness of American industry is dependent on a skilled work force that is capable of meeting today's business requirements and those of the next decade."[4]

Thus, the sixth purpose for public education, preparation for work or career, while commonly acknowledged, has never received significant emphasis. Public education officials note that the present high school curricula have been developed in response to the value system of this country which generally holds that a college education is the ticket for success. Unlike many nations, the United States does not highly value skilled trades. Frequently reminded that many college graduates earn more money than high school graduates, parents and students view higher education as the gatekeeper for economic and social mobility. Vocational educators admit that the option of training for work in high school is often rejected by students and parents as accepting second best.

Historically, preparation for work has been limited in the public schools to vocational education programs that serve students perceived as unable to afford college or less academically capable. Vocational education has been narrowly defined in its focus and its target population and often does not significantly challenge students intellectually. Employers report a growing gap between the

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[4] Anthony P. Carnevale, Leila J. Gainer, and Ann S. Meltzer, Workplace Basics: The Essential Skills Employers Want, Jossey-Bass Publishers, San Francisco, 1990.

knowledge and skills of high school graduates and the needs of today's workplace. This gap exists most dramatically for those who leave our schools without high school diplomas, but narrows only slightly for those with high school diplomas. Despite perceptions about the value of college, the gap still exists for those who complete some college--and even for those who graduate!

Notwithstanding the ongoing dialogue on the purpose of public education, it is often acknowledged that preparing students for the workplace has not been a priority for either students, parents, school boards, or society at large. Yet, virtually all students will eventually have to earn a living and hold a job. Some experts note that, in the United States, we, as a society, are not doing a good job of passing down a strong "work ethic"; they say that public schools must teach students the value of work and how to add value to work by doing a good job.

Most students will have to hold a job to make a living for themselves and their families, whether they do so after they receive a high school diploma or certificate, postsecondary education and training, a college degree, or a graduate or professional degree or complete an apprenticeship or other training in the corporate environment. Further, to stay marketable, young people must prepare to be life-long students--maintaining their skills through training and continuing education.

For these reasons, the subcommittee finds that, when considering options for students, public policy must support equal opportunity for all students to engage in programs that serve all of the purposes of public education:

- The development of the intellect;
- The transmission of the culture;
- The preparation for citizenship;
- The development of literacy skills;
- The preparation for college or other continued education; and
- The preparation for a career.

A program of studies that emphasizes only one purpose of public education will not set the standard for excellence which will be needed to keep Virginia and the United States strong in the next millennium.

Further, the subcommittee came to recognize that:

- The public perceives that vocational education does not reflect recent developments in the job market.

- The public school system must be premised on the belief that college attendance and vocational education are complementary, that is, they are not mutually exclusive.

- **All students must be held to high academic standards and provided with the skills necessary to earn a living.**

- **The dichotomy between academic and vocational programs of study does not exist in the real world and must not be allowed to continue in our schools.**

## CURRENT STATE POLICY

In Virginia, we have three important sets of standards--the most important of which is the Standards of Quality.[5] As the subcommittee's work progressed, the members were pleased to find their thoughts reflected in the Standards of Quality.

The Standards of Quality are established in the Code of Virginia and provide the statutory basis for the Board of Education's Standards of Learning and Standards of Accreditation for public schools. Support of all six purposes of public education--the development of the intellect, the transmission of the culture, the preparation for citizenship, the development of literacy skills, the preparation for college and other continued education, and the preparation for a career--already exists in the law of Virginia as the Standards of Quality. The Standards of Learning and the Standards of Accreditation are authorized in the Standards of Quality.

For example, the development of the intellect, the transmission of the culture, and the preparation for citizenship are recognized throughout the three sets of standards. In Standard 1 of the Standards of Quality, school boards are required to provide programs emphasizing "reading, writing, speaking, mathematical concepts and computations, scientific concepts and processes; essential skills and concepts of citizenship . . . necessary for responsible participation in American society and in the international community; [and] fine arts and practical arts . . . ."[6]

This provision also recognizes the need to prepare students for continued education and for a career by directing school boards to "develop and implement a program of instruction for grades K through 12 which emphasizes . . . knowledge and skills needed to qualify for further education and employment or to qualify for appropriate training . . . and development of the ability to apply such skills and knowledge in preparation for eventual employment and lifelong learning."[7]

The policy statement of Standard 1[8] of the Standards of Quality boldly declares that the "General Assembly and the Board of Education believe that the

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[5] See Chapter 13.2 (§§ 22.1-253.13:1 et seq.) of Title 22.1 of the Code of Virginia.
[6] Section 22.1-253.13:1 C.
[7] Section 22.1-253.13:1 C.
[8] Section 22.1-253.13:1. Basic skills, selected programs, and instructional personnel.

fundamental goal of the public schools of this Commonwealth must be to enable each student to develop the skills that are necessary for success in school and preparation for life . . . ."[9] The Board of Education is directed to set educational objectives--the Standards of Learning--which are "to implement the development of the skills that are necessary for success in school and for preparation for life in the years beyond."[10]

These important statements are reinforced by programmatic requirements which include "[c]areer education programs infused into the K through 12 curricula that promote knowledge of careers and all types of employment opportunities including, but not limited to, apprenticeships, the military, and career education schools, and emphasize the advantages of completing school with marketable skills." [11]

This standard also requires "[c]ompetency-based vocational education programs, which integrate academic outcomes, career guidance and job-seeking skills for all secondary students, including those identified as handicapped, that reflect employment opportunities, labor market needs, applied basic skills, job-seeking skills, and career guidance." Each school is required "to develop and implement a plan to ensure compliance with the provisions of this" law.[12]

The intent of Standard 3 of the Standards of Quality is clearly to empower the Board of Education "to prescribe requirements to ensure that student progress is measured and that school boards and school personnel are accountable."[13]

The policy statement of Standard 4 of the Standards of Quality, acknowledges the need to "reduce the illiteracy rate" and authorizes the Board to establish the Literacy Passport as well as criteria for diplomas and certificates.[14]

Educational leadership and the need for professional development and training are established as "essential for the advancement of public education in the Commonwealth" by Standard 5 of the Standards of Quality.[15]

All of the purposes of public education are also recognized in Standard 3 in the definition of and mandate for the Standards of Accreditation. The Standards of Accreditation are said to be "regulations establishing . . . student outcome measures, instructional staffing levels and positions, pupil personnel services, special education program standards, auxiliary education programs such as library

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[9] Section 22.1-253.13:1 A.
[10] Section 22.1-253.13:1 B.
[11] Section 22.1-253.13:1 D 3.
[12] Section 22.1-253.13:1 D 4.
[13] Section 22.1-253.13:3 A.
[14] Section 22.1-253.13.4 A.
[15] Section 22.1-253.13:5 A.

and media services, course and credit requirements for graduation from high school, community relations, and the philosophy, goals, and objectives of public education in Virginia."[16]

Having considered the purposes of public education, reviewed the ongoing debate over the mission of public education, and examined the content of Virginia's Standards of Quality, the subcommittee moved forward with its charge.

## CURRENT EDUCATIONAL OPTIONS

Virginia's public schools offer students a variety of options to prepare for life beyond high school. In order to meet the Standards of Quality, every school division must offer vocational education programs in secondary schools and career education throughout the K-12 curricula. The Commonwealth's schools provide several approaches to high school education, i.e., the pure academic model, vocational/technical training, and alternatives combining academic and vocational education. The delivery of these programs may be through the traditional high school; comprehensive high schools offering a range of academic and vocational programs; or regional centers specializing in particular programs. Education initiatives in Virginia also include apprenticeship programs, career shadowing, technical preparation programs, and distance learning projects.

As part of its work, the subcommittee received presentations and reviewed materials on some of the educational options available to students in Virginia. Although the subcommittee reviewed as many programs as possible, its review was, by necessity, a sampling. Thus, where specific programs are named in this report, the subcommittee's intention is to provide examples and not to express any preference for any particular program. The subcommittee acknowledges the many worthwhile programs across Virginia which were not specifically reviewed and regrets that, even if time had allowed review of all available options, no central "best practices" compendium exists.

In apprenticeships, students are trained in a skilled occupation through on-the-job experience and related classroom instruction. Thousands of registered apprentices are enrolled in classes related to their apprenticeships which are conducted at various sites in 16 service regions throughout the Commonwealth. Many of these individuals have already completed high school. The Registered Student Apprenticeship program is open to high school students who are at least 16 years old and to community college students. Although this program shows great promise, it is still small in Virginia, with 135 registered student apprentices.

Business-education partnerships are designed to bring representatives and resources from businesses, community groups, and institutions of higher education

[16] Section 22.1-253.13:3 B.

directly into connection with teachers, students, and parents. Many schools across Virginia have collaborated with local business and industry to establish partnerships in education.

The Carl D. Perkins Vocational and Applied Technology Education Act of 1990--a federal law--is an important source of vocational/technical initiatives and funding. Tech Prep, a part of the Carl D. Perkins Act, and the School-to-Work Opportunities Act of 1994 are programs intended to prepare students for technical and professional careers. In Virginia, programs funded under the Carl D. Perkins Act provide options to students within the school context, either in comprehensive high schools or in separate vocational/technical schools. These programs, whose competency-based curricula are validated by business and industry, place a strong emphasis on teaching with academic rigor, and concrete, applied learning.

The Tech Prep initiative, a part of the Carl D. Perkins Act, provides this link between secondary and postsecondary education. Tech Prep programs in Virginia create opportunities for collaboration between traditional class-room teachers and vocational/technical educators, as well as seamless educational programs for students transitioning to Virginia's community colleges. Tech Prep programs encompass grades 11 and 12 and two years of college and are available in 22 community colleges and 125 school divisions.

In Virginia, the federally-funded School-to-Work initiative consists of development grants that concentrate on four designated themes which are characterized as: *Voluntary After-School "Apprenticeships"; True, Full-Fledged Mentoring Programs; Scholarships for Post-secondary Education and Training; and Public-Private Partnerships for Alternative Education Services.*[17]

Options for the career bound integrate challenging core subjects and technical studies to prepare students for work and/or further education. This option is typified by the High Schools That Work initiative, another option combining academics and vocational/technical education. The High Schools That Work initiative is sponsored by the Southern Regional Education Board in partnership with participating states. The program promotes a comprehensive "whole school" revitalization including revision of the curriculum; elimination of the any general education track; increased academic core and focused studies; coordinated planning and teaching; providing extra help to students to meet higher academic standards; student and parental involvement in planning and completing the program; and heightened sensitivity for student potential among teachers. There are 56 High Schools That Work sites in Virginia, including William Byrd High School in Roanoke County and Gloucester High School.

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[17] See Appendix A. The four designated themes are described here as specified in materials distributed by the Office of the Secretary of Education.

Another option available in Virginia is the specialty center. Specialized curricula are developed through active partnerships with professionals, businesses, and teaching and research organizations. Magnet programs are popular forms of this option, offering smaller, special purpose programs that focus curricula in specific fields. Henrico County offers a number of examples of specialty centers/magnet programs to high school students, including the International Baccalaureate and curricula with emphases in the arts, communications, diversified studies, engineering, design, transportation, foreign language immersion, humanities, leadership, government, and global economics, science, mathematics, and technology.

An entrepreneurship option gives students the opportunity to develop and research a proposed business, product, or service in the school setting, and to learn how to prepare a comprehensive business plan. The Lee County Vocational-Technical School, for example, sponsors the Rural Entrepreneurship through Action Learning (REAL).

Regional options may be provided at a single site or, through distance learning, to multiple sites, and may combine various approaches in innovative configurations. For example, the subcommittee received a report on Project RETURN, Renewing Education Through Use of Regional Network, a distance learning project involving approximately 20 school divisions that provides education to students who have been expelled or are in long-term suspensions. The New Horizons program in the Tidewater is also a regional effort, which includes a Governor's School and a transition program for technical or certificate students who have disabilities.

All Governor's schools are regional efforts--combining high academic standards with certain curricula emphases. Nine Governor's Schools for the Gifted operate in Virginia. Enrollments range from 1,600 students in the Thomas Jefferson High Schools for Science and Technology in Northern Virginia to 93 students in the Southwest Virginia Governor's School for Science and Technology. Seven of the schools include a technology emphasis, with five schools emphasizing science and technology. The Governor's School serving Southside Virginia emphasizes global economics and technology. The Central Shenandoah Valley Governor's School emphasizes mathematics, science, and technology. The Richmond school concentrates on government and international studies and the Norfolk school specializes in the arts. Several new Governor's school programs are being organized, for example, a program for the arts and technology to be located in Petersburg to serve nine jurisdictions in Southside Virginia.

Regional vocational/technical centers operate in at least twelve sites in the Commonwealth. The programs serve from two to seven or more jurisdictions. In addition, at least twelve regional special education programs provide enhanced

services for children with disabilities by combining the resources of from three to eight jurisdictions.

Within these delivery models, there is no viable option that is not available somewhere in Virginia. Most school divisions realize that more of these options are needed to provide alternatives for Commonwealth's diverse population and that good models already exist for the development of innovative programs; however, no organized mechanism for sharing best practices has been established.

## CURRENT AND FUTURE WORKFORCE SKILLS

In response to its charge, the subcommittee created a bibliography on the current and future workforce skills and knowledge needed by high school graduates in the workplace. The subcommittee found that these publications articulate the workplace skills needed for current and future employment. [18]

Some of the skills which were identified by business and industry as essential to the workplace are strong basic skills, including reading, writing, arithmetic and mathematics, speaking, and listening; thinking skills, including the ability to learn, to reason, to think creatively, to make decisions, and to solve problems; and personal qualities, such as individual responsibility, self-esteem and self-management, sociability, and integrity.[19] Several Virginia surveys validate these findings.[20]

The subcommittee also examined the alleged gap between the competencies and skills outlined in the leading research and those demonstrated by students leaving our schools and colleges. A recent report published by the Education Commission of the States articulates this gap. The report states that "[i]t is not that students are learning less than before. Indeed, test scores of basic skills have risen over the past two decades. But students are not learning the skills and acquiring the knowledge they will need in the future . . . ."[21]

The ECS report also notes that "[t]o maintain a high-wage economy, almost all individuals will have to think through their workdays: analyzing problems,

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[18] See Appendix B: *America's Choice: High Skills or High Wages; Issues in Labor Statistics; Jobs of the Future; The Secretary's Commission on Achieving Necessary Skills; Will We Be Smart Enough? A Cognitive Analysis of the Coming Workforce; Rethinking America, A New Game Plan from the American Innovators: Schools, Business, People, Work; and Workplace Basics: The Essential Skills Employees Want.*

[19] Learning A Living: A Blueprint for High Performance. A SCANS Report for AMERICA 2000. The Secretary's Commission on Achieving Necessary Skills. U.S. Department of Labor. April 1992

[20] See, for example, the survey conducted by the Southside Virginia business and Education Commission.

[21] Education Commission of the States. *Standards and Education: A Roadmap for State Policymakers*, March 1996, p.5.

proposing solutions, troubleshooting and repairing equipment, communicating with others and managing resources of time and materials." [22]

Various studies have reported that, although most students will need more than a high school education to be employable in the 21st century, many jobs will not require a college degree. In fact, national and Virginia reports point out that 70% of future jobs will require education beyond high school, but not a baccalaureate degree.

The level of communication and mathematical skills required for professional and technical jobs is increasing rapidly and the demand for qualified employees in these jobs is much greater than the supply.[23] Identifying the skills needed for employment through job profiling is a particular concern of businesses in the Commonwealth. There are a number of job profiling systems being used in Virginia. Examples of these student options include the Work Keys System, Develop A Curriculum (DACUM), and Saville-Holsworth Ltd. inventories.

Many in the education community believe that the skills required for entry-level positions are already being taught. However, not all of the skills for employment are measurable--they must be demonstrated by performance. The business community and the literature emphasize that these skills need to be grounded in actual application so the students will be prepared to work

In studying all of the options that now exist for Virginia's students, the subcommittee found that a demarcation exists between the world of academic study and that of vocational and skills training. Some educational programs in Virginia do provide high standards in both academics and skills training. Models of these programs were described above, for example, Tech Prep initiatives, School-to-Work programs, and High Schools That Work programs. These programs seek to impart the skills necessary for entry-level employment and include business and industry in their implementation.

In many Virginia communities, however, the business community does not have a mechanism to communicate with the schools concerning the job skills needed by students. Further, the business community does not believe the public schools of the Commonwealth are measuring the competencies that the literature supports as necessary for present and future employees.

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[22] Education Commission of the States. *Standards and Education A Roadmap for State Policymakers,* March 1996, p.5.

[23] America's Choice: High Skills or Low Wages and the Virginia Department of Labor and Industry's, *Apprenticeship: Fast Track to the Future.*

## THE STANDARDS OF LEARNING AND EMPLOYMENT COMPETENCIES

The Standards of Learning are the minimum grade level and subject matter educational objectives that students are expected to meet in Virginia public schools. Along with the Standards of Quality and the Standards of Accreditation, the Standards of Learning are the legal foundations for curricula similarities among the Commonwealth's schools.

The Standards of Learning were first authorized in the Standards of Quality in 1976. The Board of Education has revised the Standards of Learning several times, e.g., in 1981, the Department of Education developed minimum skills objectives for all grades and subject areas, known as the Standards of Learning, with some controversy within the academic community, but no political involvement. In 1986, the Standards of Learning were again revised, with little apparent controversy. In 1995, the Board of Education revised the Standards of Learning for English, mathematics, social studies, and science, amid considerable controversy.

In recent years, the public has questioned the ability of public education to produce citizens who have the skills to enable the United States to compete in the global market. The Board of Education, with the 1995 revisions of the Standards of Learning, was responding to public concerns about the quality of education.

Many employers, for example, express dissatisfaction with the quality of applicants and employees and urge public education to respond to their needs. Controversy centers on what should be taught in public schools. In December 1994, Willard Daggett, a leading researcher in making the curriculum fit the future and also an expert in international curricular comparisons, said that "[t]he academic skills and knowledge needed in the workplace for entry level workers are higher and different than what we are teaching our students, even those in college preparatory programs."[24]

The revised Standards of Learning have been well received and nationally acclaimed for their clarity and rigor. Virginia's new Standards of Learning have raised the bar in many ways. Higher skills in math and English will be required. History, geography, and social studies will receive new emphases. Although the impact of these new and higher standards on employability has not been addressed, common sense tells us that increasing students' knowledge and skills will please employers. However, the subcommittee posed the question: If Virginia's students can demonstrate a mastery of the new Standards of Learning in English, mathematics, social studies, and science, will they be prepared for employment and postsecondary education?

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[24] Daggett, Willard R., *Make Curriculum Fit the Future,* The Education Digest, December 1994, p. 8-11. See also Appendix C.

The simple answer to this question is dependent on the lens through which the Standards of Learning are viewed. To measure employment competencies, the Standards of Learning and their assessments must be viewed through a wide-angle lens which includes the traditional education philosophy of teaching facts and figures as well as the ability to use knowledge and skills. The proof will come after the assessments are developed and the level of mastery measured by these assessments can be determined.

Although the revised Standards of Learning are a good beginning, the knowledge and skills needed in the workplace of this technological age go beyond the scope of English, mathematics, science, and social studies. Thus, Virginia must continue to pursue educational excellence and satisfy its constitutional duty "to seek to ensure that an educational program of high quality is established and continually maintained."

Employers and educators must fully participate in the development of the local Standards of Learning curricula to facilitate the inclusion of employment competencies. Further, public school teachers must be given opportunities to learn about the skills and knowledge needed in the workplace to provide classroom instruction which will prepare young people to apply knowledge and skills for success on the job.

## SPECIALIZED TECHNICAL INSTITUTIONS

The subcommittee was directed to examine the feasibility of establishing an institute for industrial arts and the viability of regional vocational/technical high schools. The subcommittee discussed the issues related to these directives and received information on initiatives in other states.

Postsecondary programs of technical training are available in both the private and the public sectors in Virginia, i.e., proprietary schools and community colleges. The Virginia Community College System has been accorded statutory responsibility for delivering academic, vocational and technical education to adults. The community colleges offer a variety of technical training which ranges from dental hygiene and nursing to day care and landscape engineering. The colleges also provide an opportunity for those who want to go to college, but need part-time work or an academic boost.

Legal authority to enter into "special arrangement" contracts with employers for educational services at reduced prices already exists in the Code of Virginia and, beginning July 1, 1997, scholarships will be available to full-time, second-year community college students with B averages who enroll in technical programs identified as needed in their geographical areas. However, the present funding formula for the community college system remains the same as that used for public higher education in general. Therefore, noncredit courses receive no state support.

Although the legal and administrative requirements may not yet favor immediate responses to local training needs, the community college system has begun to develop mechanisms to meet these needs. A 1997 legislative study--initiated by the community colleges--will examine funding for noncredit courses. Further, the community college system has, in the last several years, fostered good communication with the business community.

In several states, such as North Carolina and Alabama, models exist for institutes for industrial arts. In North Carolina, these institutes are applied educational components of the community colleges and provide both credit and noncredit training and education in technical areas, such as electronics, manufacturing and engineering technologies, hydraulics, pneumatics, etc. The subcommittee believes that the study committee examining the noncredit course funding will be the best venue for looking at the available options.

With regard to the discussion of full-time regional vocational education high schools, the subcommittee decided not to emphasize that option over others. After reviewing the various options available to students throughout the Commonwealth, it was determined that new distance learning technologies are changing delivery of education, including regional vocational education, and that flexibility should remain with the various school divisions to determine whether their programs would be most effective and efficient if implemented on a school, division-wide, or regional basis.

## SUBCOMMITTEE RECOMMENDATIONS

On completing its review, the subcommittee determined that the public education system must emphasize the need for and dignity of work and the value of work to earn a living and to ensure individual dignity. Preparation for life after high school must, consistent with the Standards of Quality, be articulated throughout the K-12 curricula. Every student in our public schools must be taught the basic skills in reading, writing, and arithmetic. The development of critical thinking skills and interpersonal skills which complement these basic skills must be promoted.

Students must be required to apply knowledge after acquiring it, thereby demonstrating the capability of performing in the adult world, including the work place. Because its discussions and literature reviews returned repeatedly to application of knowledge, the subcommittee determined that all students must develop the higher-level knowledge and skills necessary to find employment and become contributing members of society.

The subcommittee also wishes to emphasize that vocational and career education programs must be designed to focus on students' areas of preparation and interests and to coordinate required courses and electives to enhance the skills of

the students and to utilize the services offered by the community college system, where appropriate. The educational options available to students in Virginia's public schools must include approaches to ensure success on all grade levels for students with diverse academic and development needs. All educational programs must provide both high academic standards and skills training. School boards and school personnel must integrate academic and vocational programs in secondary schools, including middle schools, to dispel the public's negative image of and attitude toward vocational/technical education by exhibiting the identical confidence and fervor for all "academic" programs.

Partnerships between business and industry, parent organizations, and schools must be formed to provide common ground for initiatives. Unique models must be developed to bring together parents, teachers, administrators, business and community leaders and students to provide appropriate options for the diverse needs of Virginia's students.

The subcommittee supports Virginia's intention to apply for the maximum School-to-Work implementation grant for the Commonwealth. Through this program, the Commonwealth should explore innovations, seek to embrace themes in addition to the four official activities, and increase regional cooperation among the school divisions.

The subcommittee's recommendations cover the spectrum from general policy changes to specific programs. All of these recommendations have been carefully crafted to be implemented through legislative initiatives. The subcommittee also understands that school divisions' ability to implement these recommendations will be influenced by the demographics of their jurisdictions, including the geography of the school division; the size of the school division and its schools; the total expenditure per student; the condition of the school buildings; staffing levels and qualifications; scheduling configurations; access to technology; and the jurisdiction's population characteristics. The subcommittee has, therefore, assiduously avoided costly new local mandates in favor of revisions of current programs, voluntary initiatives, state activities, and minimal costs.

For its general recommendations, the subcommittee proposes that current requirements in the Standards of Quality be modified as follows:

- The Board and Department of Education and all local school boards be directed, consistent with the current mandates for vocational and career education, to eliminate the dichotomy between "academic" programs and vocational and career education programs.

- The Commonwealth's statutory curricula and programmatic content requirements be enhanced by requiring teaching methods designed to develop

critical thinking skills and develop students' ability to apply their knowledge and skills throughout the K through 12 curricula.

- The definition of the Standards of Accreditation be revised to require that the Standards of Learning assessments measure the application of knowledge and skills, including critical thinking skills, as well as recall of facts.

To implement these policies, the subcommittee also recommends the following specific programmatic amendments to the Code of Virginia:

1. That, to assist local school divisions in the implementation of the new Standards of Learning and Standards of Accreditation and compliance with the Standards of Quality, the Department of Education be required to conduct technical assistance visits to each school division on an established cycle.

2. That sixteen pilot matching grants (two for each of the eight superintendent's regions) be established, based on detailed criteria, to provide incentives to school divisions to develop innovative working relationships with employers to determine how to prepare students for the workplace; these projects must include curricula revision, elimination of the general education track, an accelerated academic program for all students, interdisciplinary cooperation between teachers in planning and instruction, heightened sensitivity to student potential, counseling for students and involvement of parents, and additional help for students to meet the higher standards; the pilots might also require identification of the needs of businesses, development of new ideas for preparing skilled employees, and development of creative ways to use existing resources.

3. That all local school boards be required to establish business and industry advisory councils comprised of broad representation from the business and industry community including various levels of employees; the councils would be charged with evaluating local programs, making recommendations for change, assisting in raising academic standards, and ensuring that students are being taught necessary entry-level employment skills; school boards would be authorized to substitute these business and industry advisory councils for the present regulatory requirement for establishing vocational advisory councils.

4. That a state business and industry advisory council be established to advise the Board of Education concerning employment skills, the importance of teaching skills to prepare students for life beyond high school, and to coordinate communications between the Board and the business and industry community.

5. That school boards be mandated to provide all middle and high school students with an educational and career planning portfolio; this activity would provide all students with a career planning tool, focus students' attention on developing marketable skills, and include job assessments; the portfolios would not be part

of the student's scholastic record. Each student would determine the contents of and uses for the portfolio; the Business Advisory Council would be empowered to review and to make recommendations for changes in the components of the portfolio.

6. That the Department of Education be directed to conduct a student/employer/postsecondary education survey on a five-year cycle beginning five years after the implementation of the educational and career planning portfolio which will (i) survey students at a given point in time (for example, one year out of high school); (ii) survey employers or educational institutions to assess the success of the students in the workplace and in postsecondary education; and (iii) determine the satisfaction with and effectiveness of the educational and career planning portfolios.

7. That the Department of Education, as the agency responsible for K-12 programs, be designated as the state education agency responsible for administering all federal and state K-12 vocational/technical funding and initiatives, including the School-to-Work program. The Department of Education should coordinate its oversight responsibilities with the Community College System.

8. The present vocational education laws[25] be evaluated and revised to reflect more accurately Virginia's public education policy, to clarify the Board of Education's role in vocational/technical education, to ensure greater responsiveness to the needs of business and industry, and to provide a more inclusive approach to the implementation of high academic standards throughout the K-12 curricula.

## CONCLUSION

To complete our report, the subcommittee wishes to return to the foundation of its study--the philosophy with which the work was performed--that :

- All young people must exit high school with the knowledge and skills to allow them to exercise choices among the options of entering the workforce, obtaining postsecondary technical education or training, going on to college, graduate or professional school or combining these pursuits; and

- All students must be provided opportunities to reach their highest potential through effective K-12 educational options and that academic achievement and preparation for work are inclusive--not exclusive--concepts.

[25] See Article 4 (§ 22.1-227) and Article 5 (§ 22.1-228 et seq.) of Chapter 13 of Title 22.1.

# FINAL REPORT OF THE SUBCOMMITTEE ON SUPPORT FOR TEACHING AND LEARNING

## I. SUBCOMMITTEE'S CHARGE

The Subcommittee on Support for Teaching and Learning was asked to look at several issues raised in the HJR 196 study resolution that are central to ensuring that our schools can maximize teaching and learning:

1. school management
2. the length of the school year and day
3. business and education relationships
4. technology in the classroom

In essence, these issues focus on the environment and conditions in which teachers and students interact. As the Subcommittee learned during the course of its deliberations, the environment for education has changed dramatically in the past ten years.

## II. THE FUTURE ENVIRONMENT FOR PUBLIC EDUCATION: THE CHANGES ARE FUNDAMENTAL

No one will challenge the statement that this world, this nation and Virginia are undergoing unprecedented societal and economic changes. These shifts are well-documented:

1. We are seeing a shift from a manufacturing-based to an information-based economy.

2. Brain power, rather than muscle power, is now the essential workforce characteristic, even in manufacturing jobs.

3. People no longer can expect to be secure in one job for their lifetime. Rather, they may have 7 or 8 jobs and even multiple careers.

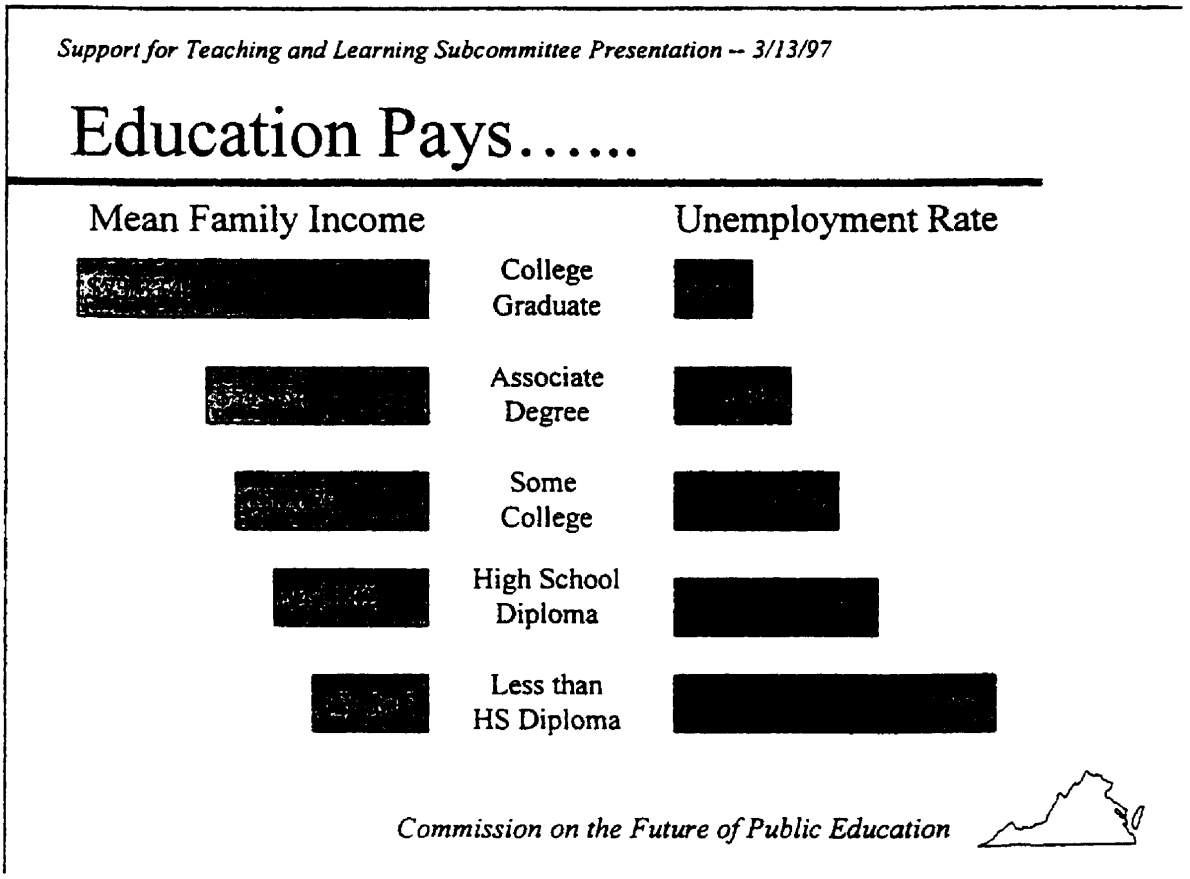
4. To keep knowledge current and skills sharp, people will need to be involved in learning throughout their lives.

5. The safety net that welfare provided has been eliminated. The goal now for all citizens is economic self-sufficiency

The Subcommittee concluded that public education must also change because the expectations of public education are expanding. Public education must continue to provide opportunities for individual learning and personal fulfillment, but now and in the future, education must also give each student the ability to earn a wage that will support the individual/family without subsidy. Furthermore, now and in the future, an educated work force is essential if a state/region/community is to have an expanding economic base.

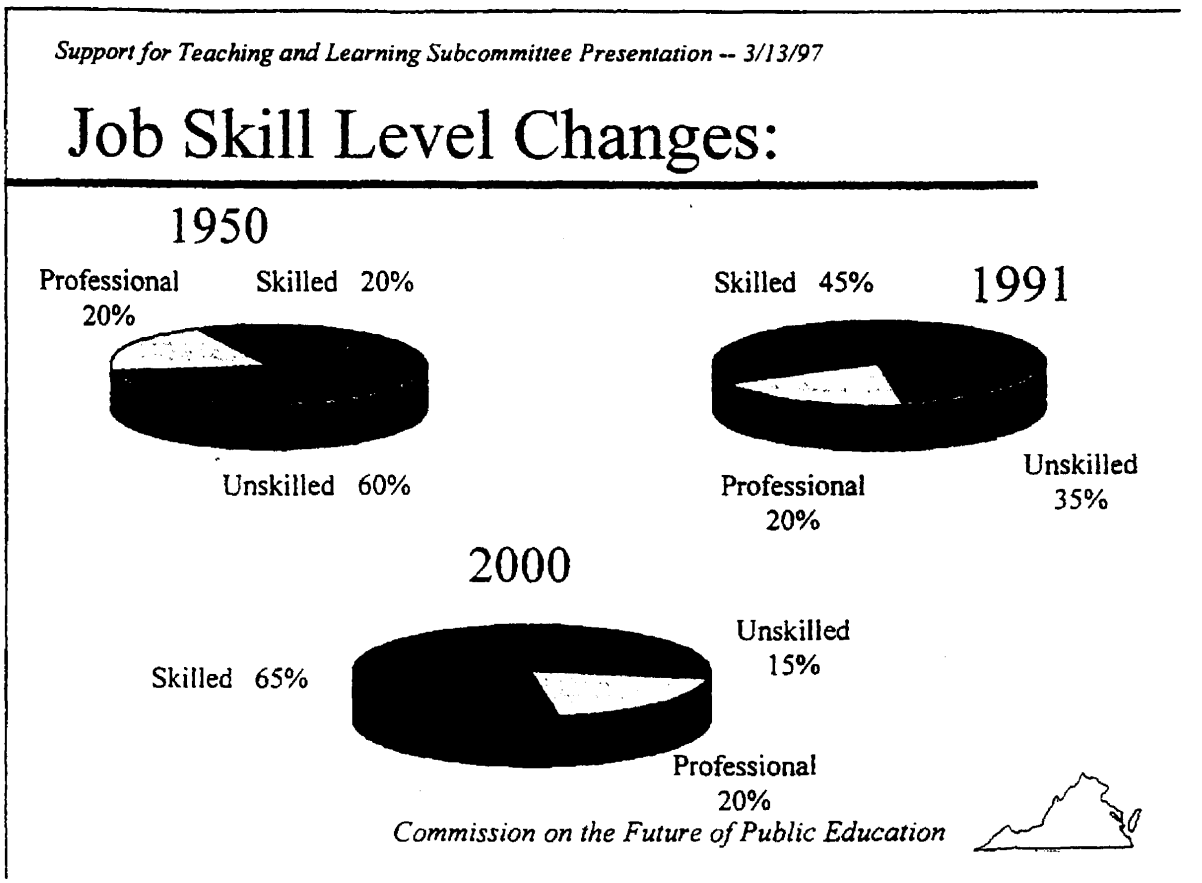
The facts are irrefutable:

- **The more education, the higher an individual's salary *and* the greater the chances of lifetime employability**




As this slide shows, the growth in family income escalates with post-secondary education. And an individual's chance for employment increases five times with a college degree. *(Source; U.S. Dept. of Labor, Bureau of Labor Statistics, 1995)*

- **Individuals will seek and need new learning and retraining throughout their lives to realize personal satisfaction and to stay employed**




As this slide shows, from 1950 to 2000, the need for skilled workers increases dramatically – In 1950, only 20 % of the jobs called for workers with special skills; today and in the future, two-thirds of all jobs will require skilled workers. *(Source: U.S. Department of Labor, Bureau of Labor Statistics, 1995)* Given these statistics, it is not surprising that the #1 criterion for business location decisions today and in the foreseeable future is the presence of a skilled workforce.

- **There is growing interest by Virginia's citizens in the long term ability of public education to successfully accomplish this expanded mission.**

Citizens are concerned about their children's future success and self-sufficiency. In a survey conducted for the Virginia Dept. of Education in 1994, community leaders emphasized the need for development of critical thinking and problem-solving skills to

enable students to function effectively in real world situations. *(Source: "Attitudes of Virginia Educators and Community Leaders Toward Educational Reform in the Commonwealth," conducted by the Thomas Jefferson Program in Public Policy at the College of William & Mary, March 1995)*

In a series of surveys and discussions with parents and community leaders conducted for the Roanoke and Norfolk papers in 1995, respondents' #1 concern was young people's preparation to survive and thrive in the changing economy. (Source: *Norfolk Pilot and Roanoke Ledger Star, July1995)*

- **Educators are concerned about their skills and abilities to teach students to achieve in the workplace, in post-secondary training, or in college.** In every public hearing conducted for this Commission, educators stressed their own need for updated skills and methods. New teachers stressed the importance of mentor programs and classroom support during the first year of teaching. This can be the difference between an effective and ineffective teacher.

- **Businesses are concerned about the caliber of the future workforce.** For example, executives from eight major corporations in Virginia told the Greater Richmond Partnership that workforce skills are lacking in many local graduates. *(Source: "How Can We Wire Richmond? A Workforce Readiness Initiative," Prepared for the Greater Richmond Partnership and the Greater Richmond Chamber of Commerce, February 26, 1997)*

  Specifically, they are seeing a gap in the knowledge and skills listed here :
  - ◊ computer literacy
  - ◊ interpersonal skills
  - ◊ communication skills
  - ◊ critical thinking skills

- **Virginia's "grade" on educational preparedness is not good.**

The February 1997 *Virginia Business* magazine noted that "an educational chasm that's almost embarrassing" is a weakness in Virginia's potential to become a leader in the growing high-tech economy. In the 1996 Economic Development Report Card for the States, Virginia gets a "C" for development capacity, primarily due to a low high school attainment level compared to other states: 38th among the states, as this slide shows

At the recent Virginia Technology Summit, industry leaders in manufacturing, information technology, transportation and other sectors stated the following:

"If an industry cannot fulfill its requirements with a local workforce, then either the industry will stagnate in that area or move to a location that affords the availability of a well-trained workforce. The Commonwealth is currently undergoing significant changes in its understanding of education and workforce readiness. The remaining resistance to change in these areas could cause severe economic damage resulting in businesses relocating outside Virginia or outsourcing much of the work to other states or countries."

- **Communities are worried about enhancing the economic base that keeps public revenues strong and quality of life high.** Everyone should be distressed by the fact that some high school graduates may have no marketable skills or credentials necessary for earning a living wage.

Richmond leaders were distressed to learn the following facts about the workforce in the Greater Richmond area:

*Recent snapshot of the Greater Richmond area:*

- *25 % of students drop out before graduating from high school*
- *only 50 % of high school graduates enter college*
- *only 50 % of those who enter college graduate*
- *bottom line: 18-19 % of students have college degree; large percent have no high school degree, and perhaps no skills*

In economic terms, a high school diploma these days does about as much good as rabbit ears on a computer. A worker armed only with a high school diploma today has fewer prospects than a dropout a generation ago. And a dropout today has almost no chance of getting a job that pays a living wage.

The Subcommittee believes that the commission must address these concerns in crafting a vision for public education.

## III. LEADERSHIP: A CRITICAL INGREDIENT IN SUPPORT FOR TEACHING AND LEARNING

The Subcommittee discussed at length a number of current approaches to organizing and managing schools; to reconfigure time for learning; and to maximize learning through the use of technology. It also heard about the commitment of many Virginia businesses and industries to building relationships with students and schools. Nearly all approaches discussed were targeted to improving student achievement; a few were deemed "successful;" many were too new to assess.

But one theme was common to all: leadership. For example, in Kentucky, major educational reform has been in place for nearly 7 years. In two recent evaluations of progress by independent evaluators, the presence or lack of leadership by the principal, superintendent, and/or school board was the determining factor in the success of the reform efforts.

Leadership is generally defined as the ability of an individual to motivate others to undertake positive actions. If leadership was effective in schools, then the program's chances of success were greatly improved; if leadership was poor or non-existent, the chances for high, sustained success were weaker. Almost every method or study reviewed emphasized "leadership." Often the author referred to private sector leadership as the best model.

The Subcommittee wanted to get a firmer grasp of the components of leadership, to begin to define it in terms of activities and behaviors that might be emulated in public education. To help understand the private sector model, Dr. Howard Tuckman, Dean of the VCU School of Business, addressed the subcommittee. His "Seven Characteristics of Successful Leaders" became the platform for the subcommittee's recommended support system for teaching and learning.

### 1) Sensitivity to the Customer

*Successful individuals in business are responsive to the consumer and to what he/she wants in the product. They listen carefully and may actively solicit customer input through market research. A problem in education at all levels is an arrogance that we believe we know the desired product (student learning) better than the customers do.*

Challenges for Public Education

- Education serves many customers (parents, students, business, teachers, higher ed institutions) with many, and varied, expectations.

- Education is not always sensitive to the broad range of customers.

- Education does not do a good job of assessing customers' needs; of listening to the customer

Barriers to Implementation

- Little value is attached to information collection and analysis for strategic decision-making about customers.

- It is hard to jettison the emotional aspect of the teaching process and deal with the issues objectively.

- Education is a process that has no control over the quality of its "raw material" but is expected to produce a consistently high-performing "finished product."

**2) Concern for the Bottom Line and the Shareholder**

*Success in business means accountability to the shareholder. There is no comparable measure of accountability in education.*

Challenges

- Business devotes substantial resources to "shareholder services", including satisfaction surveys, research and development of information and products. Public education does not.

- Every taxpayer in Virginia is, in a sense, a shareholder in Virginia's public schools.

- Three-fourths of Virginia's taxpayers do not have a child/relative in public school, yet all taxpayers are supporting the schools.

- Like investors, taxpayers are content if they feel they feel they are getting a good return on their investment.

- Without a reliable, ongoing system of measuring outcomes and reporting them to the public, there is no way to give taxpayers a sense of "return on investment."

- Moreover, there is no way to benchmark performance and target areas for improvement.

- Schools are not data-driven , even though enormous amounts of data are collected.

Barriers to Implementation

- Schools lack the staff to develop, maintain, and analyze data and present it in useful form to the public and to decision makers.

- Potential users of school-related information do not know how to use it to implement change.

- Schools are reluctant to invest resources in non-instructional personnel to do "research and development."

- Educators do not feel comfortable with public dissemination and comparison of performance data, because they seldom have the time or money to "fix" the problems that are highlighted.

- Schools do a mediocre job of talking up their successes -- opportunities that business would never miss.

**3) Embrace Technology as a Tool**

*Business uses technology as a complement to and substitute for traditional means of accomplishing tasks. This true integration of technology in schools is rare and episodic.*

Challenges

- "Technology" is viewed as a "quick fix" for poor performance by citizens, business, and politicians.

- Taxpayers would rather spend the money on hardware and software than on training and curriculum development that are needed to ensure that technology is used effectively.

- In many schools, students know more about technology than teachers.

Barriers to Implementation

- Technology planning is spotty in some school districts.

- Funding is scarce for technology experts and trouble-shooters.

- Teachers do not have the time to develop and test ways of integrating technology in the teaching methodology.

**4) Awareness of Vulnerability (Also see Risk-taking, #6)**

*Business leaders are acutely and constantly aware of individual vulnerability in the competitive workplace. Schools and school leaders, on the other hand, are inclined to approach the marketplace with "monopoly" thinking.*

Challenges

- Real "competition" from the private sector or from "choice" within the public sector has not emerged as a catalyst to change in public school districts.

Barriers to Implementation

- Schools and teachers are rarely compared on measures of effectiveness, which stifles any outside push for change.

**5) Understand the Role of Markets**

*The best leaders understand their markets, scan them often, and use what they know in strategic planning. Education is also in the marketplace, with customers and a changing landscape.*

Challenges

- Education has many markets, each with its own customer base (see #1).
- Sometimes addressing the need of one market (business, for example) is perceived as running counter to the needs of another (parents, for example)
- An emerging market in Virginia is the political market, where school policy and performance are becoming a primary focus of political campaigns.

Barriers to Implementation

- Because of limited data collection and analysis, public education knows very little about the changing needs of its markets.
- No matter what we learn about the needs of other markets of public education, the political market may drive policy decisions to a significant degree.

## 6) Willing to Take Risks

*In education, what's the incentive to take risks?*

Challenges

- One reason business is more willing to take risks and learn from mistakes is because the planning horizon is longer: there is vision of where the business wants to go over one or more decades. Public education looks for the expedient way to satisfy its many customers.

- The "culture" of public education, both K-12 and post-secondary education is risk-averse.

- Students have little incentive to risk the honor roll by taking tougher courses. Students, parents and society value the grade rather than the rigor.

- Many teachers have been in school settings, working under long-term contracts, for all of their careers. They have had limited exposure to settings where risk-taking is encouraged and valued.

Barriers to Implementation

- The current reward structure for students (grades and test results) does not give students incentives/rewards/encouragement for "pushing the envelope."

- A strong, confident, entrepreneurial leader is the best motivator for risk-taking. The nature of the public education career ladder results in principals and superintendents who have matured in risk-averse settings.

## 7) Ability to Work in a Team Environment

*Business rewards people who can work in a structure that recognizes interdisciplinary products. Education has not yet developed an appreciation for working in team settings.*

Challenges

- The culture of public education remains focused on the classroom as the key setting for learning and the classroom teacher at the front of the room as the key provider of learning.

- Business has invested considerable money on redesigning the nature of work and

training employees to work together in the new environment. Public education cannot establish its own goals and raise the price of its "product" or raise funds from shareholders to pay for the design.

Barriers to Implementation

- Taxpayers don't like to see big sums of money directed to "soft" pieces like training and staff development.

- Better data need to be developed that show the value of team-based curriculum development and teaching.

- "Teaming" is often viewed by non-educators as just another "innovation du jour."

As the Subcommittee was examining the organization and management of schools, it learned about many school districts where innovation is occurring, and principals and teachers are empowered to meet the needs of their students. The Subcommittee was particularly interested in efforts underway in Hanover County public schools, that these illustrate many of the characteristics of effective leadership emphasized by Dr. Tuckman. And in Hanover County, this approach is paying off – in terms of community satisfaction, student achievement, and costs.

***Hanover County Public Schools***

Hanover currently ranks in the lowest 10% in per pupil expenditures and in the top 10% in student achievement. In the private sector, this achievement is called "Getting the highest quality for the least cost."

Furthermore, Hanover County has a competitive spirit. In 1991 they entered the national competition for the U.S. Senate's Productivity Award for School Renewal and Continuous Improvement – and the won!

In April, e1997, they received the ACE Award (Award for Continuous Improvement – the next level of recognition. Among the criteria for the ACE award are:

- top management and employee commitment to and involvement in continuous improvement
- recognition and reward systems for employees
- a performance measurement process
- customer and supplier involvement
- a plan for continuous improvement, and
- results over time

**The Subcommittee's Conclusions about Leadership**

The Subcommittee believes that skilled leaders make a significant, positive difference in the operation of schools and the achievement of students. The development of these leaders is an important support role that the state should undertake more aggressively. To increase the corps of trained and skilled leaders in public education, the Commission should consider the following actions:

**Recommendation No. 1:** The State Board of Education should establish leadership standards and incentives for superintendents and principals, and the Department of Education should develop and offer programs that train effective school leaders. We also strongly urge that local school board members participate in these programs.

Examples of programs:

1. executive leadership seminars held in the summer
2. graduate programs combining courses from schools of business and education
3. leadership training courses offered around the state on weekends

- For current principals and superintendents: Implementation of executive leadership seminars to be held during the summer on the campus of one or more Virginia institutions of higher education. Programs should be designed and delivered collaboratively by business and education experts.

- For aspiring principals and superintendents: Implementation of a graduate degree program delivered collaboratively by a business school and a school of education. Emphasis would be on incorporating effective leadership strategies from the corporate model into the work of public education.

- For teachers: Implementation of leadership training programs for K-12 teachers delivered collaboratively by schools of business and education. Training would focus on shared decision-making, teaming, mediation, communicating with customers, marketing successes and adapting to change.

**Recommendation No. 2:** The Department of Education should establish and operate an information clearinghouse and periodic summary of "best practices."

**Recommendation No. 3:** The position of chief information officer should be established in the Department of Education to assist local school divisions in the collection, analysis, and use of student- and school-based data.

## IV. Rethinking the Use of Time to Improve Student Achievement

In the on-going discussion about the necessary ingredients for improved student learning, the issue of time spent on learning recently has received increased attention. That is not surprising when people hear these statistics:

◊ between ages of 5 and 18, young people have 4,745 days or 113, 880 hours of time to use

◊ children spend roughly 9 percent of their lives in school; 91 percent somewhere else

The challenge for educators is three-fold:

1. to determine whether the 9 percent is enough time for every student to learn and achieve

2. to ensure that the time spent in school is used to maximize each child's learning and achievement

3. to create an environment outside of regular school hours that promotes and supports their education

The issue of time was given a high priority national focus in 1984. *The National Commission on Time and Learning* was created by Congress after the issuance of A Nation At Risk. The Commission was an independent advisory body charged with reexamining the relationship between time and learning. The Commission pointed to five widely-held premises that research shows to be false. They referred to these as a "foundation of sand" for learning in the United States:

Premise #1: the assumption that students arrive at school ready to learn in the same way, on the same schedule, all in rhythm with one another.

Premise #2: the notion that academic time can be used for non-academic purposes with no effect on learning.

Premise #3: the pretense that because yesterday's calendar was good enough for us, it should be good enough for our children – despite major changes in the larger society.

Premise #4: the myth that schools can be transformed without giving teachers the time they need to retool themselves and reorganize their work.

Premise #5: the fiction that we can expect world-class academic performance from our students within a time-bound system that is already failing them.

As a result of its study, the Commission offered eight recommendations to the nation:

1. Reinvent schools around learning, not time.
2. Use time in new ands better ways.
3. Establish an academic day around core academic subjects.
4. Keep schools open longer to meet the needs of children and communities.
5. Give teachers the time they need.
6. Invest in technology.
7. Develop local plans to transform schools.
8. Share the responsibility for results: finger pointing must end.

In the early 1990s, the issue of time once again became the subject of special studies in Virginia. 1992 study on "Instructional Time and Student Learning" by the Department of Education for the Secretary of Education examined the following:

> **Relationship between instructional time and student learning** . --Conclusion: increases in allocated time alone may not influence student achievement if the level of instruction and quality of time are not sufficient.
>
> **Extended school year.** Conclusion: Virginia's school year is consistent with that offered throughout the U.S. In most other countries, longer school years prevail (Germany - 188 days/yr., Japan - 220 days, including two Saturday mornings per month)
>
> Public opinion on Virginia citizens showed that communities were not supportive of expanding the year (67% of Virginians favored keeping the current calendar).
>
> **Extended school day.** Conclusion: Virginia's 5 ½ hour day is consistent with the rest of U.S. In 1991, approximately one-half of Virginia's school divisions offered before or after school programs for academic (mostly remedial ) purposes.

**Year-round use of facilities to relieve overcrowding.** Conclusion: Not supported by the public; no impact on student learning; no Virginia schools are currently doing this according to DOE.

**Summer school** Conclusion: Most (91%) school divisions used summer school programs for remediation, acceleration, and promotion.

A follow-up study for the legislature the next year looked at the resources required. As of 1996, the total cost of extending the length of the year from 180 to 210 days was estimated at $470 million or $15.7 m./day (55% of this amount would be from state funds; 45% from local funds). Over $14 m. of this amount would go for salary/fringes.

250,000 for substitute teachers, $1.2 m. for transportation.

## Why Time Should Be Seriously Considered

The Subcommittee concluded that no one factor can be considered to influence student performance in isolation from other factors. However, it concluded from the data presented to the Commission last fall and to the Subcommittee this winter that the use of and amount of time available for learning is a critical factor. The Subcommittee heard from knowledgeable, experienced educators and researchers, among them an expert on time and learning with an outstanding national and international reputation -- Dr. Robert Lynn Canady, Professor of Education from the Curry School of Education at UVA.

Here is what the Subcommittee learned about time and learning:

1. Although many reforms have occurred in education over the past 40 years, the amount of time for learning has not changed (180 days, 5 ½ - 6 hour days).

2. Regardless of the length of the class period (especially in middle and high schools) – 50 or 90 minutes – only about two-thirds of the time is actually spent on learning. The other one-third is lost to behavior problems, "pull out" students, dissemination of materials, etc.

3. The school schedule assigns the same amount of time for learning no matter how complex or simple the school subject.

4. During the course of a class period, students with special needs are "pulled out" of class. This disrupts their and all students' learning.

5. Yet some students take three to six times longer to learn the same thing. In order to have an equal opportunity to reach high standards, they must be given the time they need.

The dilemma for schools is how best to increase or better use time to meet the learning needs of students. The Subcommittee on Support for Teaching and Learning examined the issue of time in three ways:

1. How can we **better use time as currently configured** to improve student achievement?

2. How can we **redesign** the time available for learning?

3. How can we **expand** the time available for learning?

Dr. Lynn Canady from UVA provided the Subcommittee with a wealth of information on innovative scheduling. His major point was: "The most critical time allocation issue schools face is the indisputable fact that some students need more time to learn than others." He noted that scheduling should accomplish the following:

1. Eliminate short, fragmented, chopped up time periods so all students have more time to concentrate and learn;

2. Provide variable learning time to meet students' needs;

3. Create a positive school environment (reduce behavior problems, increase positive student-teacher interaction); and

4. Provide more time for teacher preparation/planning during the day.

Schools are looking at a number of ways to increase the hours available for learning:

1. before and after-school programs, both on-site and in collaboration with community sites

2. Saturday enrichment and remediation programs

3. summer enrichment and remediation programs

4. more days in the school year

The Subcommittee learned of innovative schedules in sue in Danville, Buena Vista, and Fairfax County.

**The Subcommittee's Conclusions About Time**

For students of all ability levels, more time used more effectively generally means more learning and higher achievement will result. Yet public education, for a variety of reason, has not aggressively pursued approaches to maximize the use of time. Time is an important factor in learning that must be examined in a focused and comprehensive way. The objectives in undertaking such an effort should include:

-- providing students with more time and opportunities to learn

-- emphasizing the core academic disciplines

-- reducing fragmentation of learning time

-- increasing teachers planning/professional development time

-- involving communities in a collaborative decision-making process

-- rejecting the "one size fits all" approach to time

-- taking advantage of innovations that have worked elsewhere

-- evaluating/measuring results in student achievement

-- making optimal use of resources.

**The Subcommittee's Recommendations**

**Recommendation No 4:** The State Board of Education should provide technical advice and incentives to local school boards to examine and try new approaches to the use of time.

The following actions should begin next summer:

**A. In the summer of 1998**, DOE should hold a statewide conference for local school boards and instructional leaders on effective ways to redesign and extend time for increased learning.

**B. During the 1998-99 school year**, the Department of Education should provide start-up grants to school divisions that wish to develop new ways to use time.

**C. For the 1999-2000 school year**, the state should establish an "Innovation Fund" that will provide seed money to implement successful proposals.

## V. TECHNOLOGY IN THE CLASSROOM: VITAL SUPPORT FOR TEACHING AND LEARNING

The Subcommittee on Support for Teaching and Learning examined a broad range of issues related to technology in the public schools:

1. the link between a technology-literate workforce and the economic vitality of Virginia;

2. state-level planning underway to incorporate technology in the core curriculum of public schools;

3. efforts underway in the public schools to acquire technology;

4. the ability of teachers to use technology to enhance teaching and learning; and

5. opportunities to acquire affordable telecommunications and information technology in all schools throughout the Commonwealth.

Each of these issues and the Subcommittees recommendations follow.

### The Link between Technology and Virginia's Future

At the recent Virginia Technology Summit representatives of business, government, and higher education presented compelling information about the importance of technology to the future of every Virginian and to the Commonwealth as a whole. For example:

**high tech jobs are among the highest paid** positions in the U. S. and Virginia -- the average high tech annual salary in Virginia is $45,000 today. By 2002, the average will be $65,000;

**job vacancies abound.** In Northern Virginia alone, there are +18,000 job openings for information technology workers;

**the U. S. Department of Labor forecasts significant demand** across all sectors of the American economy in the next five years for people with information and computer technology skills. Sixty percent of all jobs created in the future will require such skills;

**Virginia's technology sector is growing three times as fast** as the overall state economy; but

**inability to fill jobs means lost revenue** for companies, economic losses for communities, and lost opportunity for citizens.

Too many Virginia students leave high school unprepared for more education or for a high-skill, high-wage job. That is a major disconnect between an education system designed to serve the citizens and communities of the Commonwealth who fund it.

The bottom line is this: the high tech industry in Virginia will flounder on the shoals of its workforce shortage unless there are dramatic, urgent, and systemic changes in the way the state educates children and trains workers. It is not surprising that representatives of Virginia's 2,450 technology-based businesses cited workforce development as the number one issue facing the high tech industry.

**Technology Requirements and Model Programs**

With the adoption of the new Standards of Learning (SOLs) in 1995, Virginia established expectations that students would become more proficient in using technology for improved learning and achievement. Incorporated into the SOLs are "computer/technology standards" representing skills and knowledge that students should acquire by the end of grade 5 and 8.

The SOL document further states that as the computer/technology skills are essential components of every student's education, so the teaching of these skills should be the shared responsibility of teachers of all disciplines. Local school divisions are responsible for incorporating the SOLs into the local curriculum.

The Subcommittee heard from technology experts in Goochland County Public Schools. Goochland is considered a leader in the state in its application of technology to teaching and learning. Goochland is a recipient of a National Science Foundation Grant to increase teachers' use of networked technology. Goochland's success in incorporating technology into all aspects of the instructional program is based on several factors:

- Leadership for instructional technology comes straight from the Superintendent. Moreover, the Director for Instructional Services is committed to the full and effective use of technology throughout the school division.

- Goochland has a full time Media Specialist whose responsibility is to provide training to teachers on the use of hardware and software, provide technical assistance, and help teachers employ technology in the curriculum.

- The Media Center is at the heart of the school division, and technology is at the heart of the Media Center.

- Teacher training on technology is on-going -- during teacher preparation periods during the school day, before and after school, and in special workshops.

**Technology Planning at the State Level**

The Subcommittee heard from representatives of the Department of Education regarding the state's *Six-Year Plan for Educational Technology in Virginia.* Here is what the Subcommittee learned:

- As a result of previous state initiatives under the *1988-1994 Six-Year Technology Plan for Virginia*, locally funded efforts during the same period, and the 1994-96 Library Automation Initiative, a broad base of technology is in place in Virginia schools.

- Supported with funding provided by the General Assembly, more than 10,000 computers and relevant software were provided to strengthen instruction for middle school students, especially those deemed at-risk of failure.

- Over 300 satellite dishes and receiving equipment make distance learning courses in AP Calculus and AP English available to students in every high school.

- Teachers and administrators received entry-level training in technology utilization.

- School divisions, stimulated by the state subsidies, added their own financial resources to expand their technology programs.

But the plan indicates several areas where Virginia needs to make major and rapid strides to prevent a backslide:

- Reports show that only 31 percent of Virginia schools have local area networks. Much needs to be done to install the necessary infrastructure to meet technology-based instruction for the future.

- Current telecommunications costs and demand for additional service are imposing severe limitations on schools, especially those where financial resources are low.

- For over a decade, microcomputers in schools have provided the core of technology-based instruction. The most recent year in which survey data were available, there was an average statewide ratio of one computer to every 10.5 students.

- Schools with the lowest composite index have fewer microcomputers and, therefore, a higher ratio of students per microcomputer.

- On-going training of teachers must be a priority. Too few teachers are more computer literate than the students they teach. Moreover, there is an urgent need for teachers to understand and use technology in the design and implementation of curriculum.

Without timely and committed leadership in the area of technology, the potential of technology as a teaching tool will never be tapped. And Virginia's graduates will not measure up in the job or higher education markets.

**Recent Efforts in Telecommunications to Support Teaching and Learning**

The technology environment is right for maximizing learning in Virginia, according to technology experts who briefed the Subcommittee.

The Commonwealth has one of the world's leading fiber-optic infrastructures, and a public-private partnership known as *Net.Work.Virgina* is adding flesh to that telecommunications skeleton. Formalized in June, *Net.Work.Virginia* includes Virginia Tech, Sprint and an alliance of local-exchange carriers. Tech engineers are designing and managing the backbone of the system. Sprint is providing the long-distance service, and the local-exchange carriers are building the statewide infrastructure.

The public sector – led by the state Council on Information Management, Old Dominion University and the Virginia Community College System – is supporting the effort by purchasing the broadband service and demonstrating its potential. (The network enables top teachers to reach more students, and it allows prison doctors to examine inmates who are miles away. State troopers and other government employees can access data around the world with a simple click of the computer mouse.) If the network's growth continues at its current pace, the state will be one of the only places in the world to have this type of technology available on such a grand scale.

School systems want to hook their wide-area networks up to *Net.Work.Virginia*, but they say it costs too much right now. The negotiable price for *Net.Work.Virginia* runs from $12,840 to $146,746 per year for schools and state agencies. That may sound like a lot, but the network can eliminate the need to use multiple vendors for services such as Internet connections, switchboard functions and multimedia feeds.

The recently passed Federal Telecommunications Act of 1996 provides discounts and incentives for schools to access these statewide networks. The key provisions are these:

1. In the Act, Congress directed the Federal Communications Commission and the states to take the necessary steps to establish support mechanisms to ensure the delivery of affordable telecommunications and information services to all consumers, including low-income consumers, eligible schools and libraries, and rural health care providers.

2. Eligible schools and libraries will receive universal service fund (USF) discounts on all commercially available telecommunications services, Internet access, and internal connections.

3. Discounts will range from 20% to 90%, with the higher discounts being provided to the most disadvantaged schools and libraries and those in high cost areas. Discount payments will be available starting January 1, 1998 on a first-come-first-served basis.

4. Schools and libraries are eligible for discounts on contracts negotiated prior to the Joint Board's Recommended Decision for services that will be delivered after May 7, 1997, provided the expenditures are approved by the USF Administrator. The FCC concluded that it would not be in the public interest to penalize schools and libraries that have aggressively embraced educational technologies and have signed long-term contracts for service by refusing to allow them to apply discounts to their pre-existing contract rates. This exemption from the competitive bidding requirements does not apply to voluntary extensions of existing contracts.

The Subcommittee believes it is vital that the state provide technical assistance and guidance to local school divisions so they can take full advantage of the Act.

The Subcommittee offers these recommendations:

**Recommendation No. 5**: Virginia should invest in the technology platform necessary for the future. The following sequence is recommended:

**By the 1997-98 school year**, the Department of Education and the State Corporation Commission should collaborate to ensure that school divisions take advantage of the cost-

savings available through the Universal Service Provision of the Telecommunications Act of 1996.

**By the 1998-1999 school year**, the Board of Education in consultation with business and local school boards, should establish technology guidelines for schools. These guidelines should encompass: 1) the minimum number of computers per class; 2) software options that reinforce the Standards of Learning; and 3) appropriate standards for connecting schools to the Internet.

**By the 1999-2000 school year**, the General Assembly should fund substantial progress toward meeting the guidelines.

**By 2000-01**, all schools should be in compliance with guidelines for this platform.

**Recommendation No. 6:** The General Assembly should incorporate guidelines for technology infrastructure and on-going teacher training as part of the Standards of Quality.

**Recommendation No. 7:** Preservice programs for new teachers should require technology proficiency as a condition for licensure, and experienced teachers should be required to meet minimum technology competencies as a condition for licensure.

**Recommendation No. 8:** The General Assembly should require and fund the following technology positions in local schools: 1) at least one full time instructional technology expert per school division to plan and to train teachers; 2) at least 1 technology assistant for every 50 teachers to help teachers and students use technology.

## VI. Business-Education Partnerships

Over the past decade, businesses across the country have become more involved with students and programs in public schools. The traditional activities have been: adopt-a-school; mentoring individual students, shadowing professions in their workplaces, participating in career days, and speaking to classes about professions, good work habits, and job qualifications.

Some corporations provide equipment, such as computers, and special grant funding for specified types of activities. Many mid-sized and small businesses also offer time and resources to help our schools.

- The goals of most of these programs are:

    1. for business to become more involved with the outside community
    2. for business to play a role in the development of the future workforce
    3. for business to have a positive influence on student achievement

In most cases, the impact is on individual students or on schools. We do not know how many of these efforts exist. We do not know how successful they are in bringing about long-lasting change, either in student attitudes or performance.

The Council on Aid to Education, a national clearinghouse for this type of information, calls these types of programs *Enrichment Programs* – directed toward enhancing the academic and social experiences of students while maintaining the traditional structure and organization of schools and school systems. There is no doubt that enrichment programs like these are important, and are a valued contribution. They should be continued, and expanded to areas where none exist.

**New Direction for Business Involvement**

The Subcommittee heard compelling evidence that the skills needed in today's and tomorrow's workplace are changing dramatically. As public education attempts to retool to meet the future demands, it is increasingly important that the employers of our students be closely involved in the retooling process. The Subcommittee believes it may be time for public education and businesses to shape another, more long-term direction for partnerships and business involvement in the area of long-term, systemic reform.

Here are a few of the activities where business involvement could make a big difference

Curriculum-driven reform:

1. train teachers and students on the use of computers and technology

2. advise on the reallocation of and innovative use of funds to support high tech and distance learning

Enhancing teacher capacity

1. Invite teachers into companies for job-related experiences

2. Advise and consult with teachers on how to incorporate work-place behaviors into the curriculum

3. Facilitate regular on-going meetings with groups of teachers on new demands of the workplace, hiring practices, and types of job duties of entry-level jobs

Managing the Change Process

1. Provide on-site consultants to help teachers, staff, and administrators develop new management approaches

2. Facilitate development of self-evaluation tools to assess programs

3. Help develop communication strategies to inform the community on new structures

There are many other ways that businesses can become more active players in school change and in enhancing student achievement. It is important that the state and local school districts make this involvement as easy as possible. The subcommittee learned of several barriers that may be hindering the full development of these relationships:

1. In many communities there is no coordination of partnerships among schools, and businesses are approached from several schools within the same district.

2. Another barrier is that education does not always give public recognition to the involvement of business in meaningful efforts.

3. Businesses sometimes to not get feedback on the results of their efforts. Schools need to develop ways of measuring what works and what doesn't.

4. Finally, educators need to pay attention to what business has to say. Educators cannot simply ask business for its money and not listen to its predictions on future needs or its advice on better ways to manage.

**The Subcommittee's Conclusion**

Business' involvement in public education has been important for individual *students and schools*. Business should be increasingly involved in planning and implementing fundamental changes to the delivery and accountability *systems* in public education.

**Recommendations**

The public education community should make it easy and worthwhile for businesses to engage in long-term relationships with education. Some approaches include the following:

**Recommendation No. 9:** The Department of Education in collaboration with the Virginia business community should disseminate information to school divisions on best ways to establish and expand relationships with local businesses.

**Recommendation No. 10:** The Virginia General Assembly should create an advisory group of business leaders to advise the Board of Education and the Governor on workforce readiness issues in Virginia.

**Recommendation No. 11:** The Virginia business community should make regular contact with state and local educators on the skill needs of the workplace.

## VII. CONCLUSION

It used to be that the economy's most valuable cargo traveled at 55 miles per hour over interstate highways. Not any more.

With advances in fiber-optics and digital communications, the economy now operates at the speed of light. Fiber and photons are the coal and coke of the new age. Geography, size, and natural resources have been eclipsed by innovation, speed and intelligence as the key competitive advantages. And the market for people who can move those 1's and 0's isn't just local anymore – it's worldwide.

The information economy has two important implications for this Commission.

> **First**, we simply *must* prepare students to become knowledge workers. The consequences of mediocrity are too glaring to ignore. The fact is, people who *know* more *earn* more. They are less likely to be unemployed. Today's college graduate earns *twice* as much as a high school graduate and *three times* as much as a high-school drop-out. These distinctions will become worse, not better, as we approach the 21st century.
>
> **Second**, we must prepare Virginia to compete in the global market for intellectual capital. Information technology fundamentally challenges the historic advantage that Virginia has enjoyed as a centrally-located state with a strong manufacturing and government base. In order to continue to attract investment and jobs, we will have to compete on a worldwide basis by offering the only things that matter in the information economy:

The *good* news is that, if we meet this challenge, we have the potential to create for our children and ourselves a new era of growth and prosperity and rising standards of living.

# REPORT OF THE
# SUBCOMMITTEE ON CONSEQUENCES AND ACCOUNTABILITY
## TO THE
# VIRGINIA COMMISSION ON
# THE FUTURE OF PUBLIC EDUCATION
# JUNE 12, 1997

## *BACKGROUND*

The accountability movement in public education is described as "a tripod—whose three legs are:

1. clearly stated standards or goals for student achievement,

2. prompt and accurate assessment of progress toward them, and

3. positive and negative consequences that follow from the information."

There is a growing trend among the states to develop methods of holding teachers, administrators, schools, students, and even parents accountable for student effort and performance. States across the country, and particularly in the South, are experimenting with various models of accountability. Accountability programs may include various "indicators" of pupil, teacher, and school performance; revised evaluation and accreditation initiatives; or post-graduation tracking of students. Inextricably linked to educational accountability programs are standards—skills or competencies that are valued—and assessments—the measurement of progress toward the achievement of those standards.

The public education accountability movement in the United States is a relatively new one. Unfortunately, accountability track records are not long enough so that educational leaders elsewhere can adopt them with the certainty of success. But some programs are quite promising, incorporating features that have worked for decades in business and industry in the United States. Kentucky,

Florida, and Tennessee have compiled early evaluations of their programs, which other states will find instructive.

Virginia must take action now to join the states on the forefront of the accountability movement. Virginia is a national leader in adopting rigorous standards of learning and assessment methods -- two legs of the tripod. Now the Commonwealth needs to build the third leg by adopting the best features of existing models and moving forward with a fully-developed system of accountability.

## *THE SUBCOMMITTEE'S CHARGE AND APPROACH*

The Subcommittee on Consequences and Accountability was given the broad charge of recommending a system of accountability for Virginia. The Subcommittee examined four areas that are vital components of the accountability movement in U. S. public education:

- appropriate student conduct;
- parental (or family) involvement in a child's education;
- rewards for positive academic performance; and
- consequences for unacceptable academic performance.

The Subcommittee determined that these components must be in place in every public school in the Commonwealth if Virginia is to achieve a world-class system of public education.

These topics have been of great interest to Virginia's leaders in recent years. The HJR 196 Subcommittee on Consequences and Accountability drew on the work of other gubernatorial and legislative study efforts. The reports of the Commission on Accountability for Educational Excellence (HJR 168, 1997) and the Joint Subcommittee on The Efficacy and Appropriateness of Creating a School Incentive Reward Program (HJR 165, 1997) were especially helpful to the Subcommittee's work.

The Subcommittee also examined efforts underway in other states, as well as national studies by educational research organizations such as the Education Commission of the States (ECS) and the Southern Regional Education Board (SREB). In addition, the Subcommittee heard from teachers, parents, students, and administrators about high-performing schools, programs, and students in Virginia.

## *ACCOUNTABILITY IN THE SOUTH*

Accountability is not a new idea in education. But it has become a greater focus of educational reform efforts in the states. As pointed out by the SREB in its recent assessment of accountability in the South, today's approaches are the result of decades of trial and error, as states looked for the best policies to promote and ensure student success.

The South is leading the nation in the number of efforts underway to hold schools accountable for student progress, reward positive movement, sanction and intervene in lackluster performance, and provide parents and community leaders with school-by-school report cards. As the following chart shows, Virginia lags most of the southern states in implementing a comprehensive accountability program.

Three states that should be watched closely are Kentucky, Tennessee, and Florida. Their accountability programs have been in place the longest and have received internal and external evaluations that can inform other states that are developing programs:

- The Kentucky Educational Reform Act of 1990 (KERA) is one of the most closely studied accountability systems in the United States. KERA and its companion assessment program -- the Kentucky Instructional Results Information System (KIRIS) -- have spurred positive changes in classroom instruction, such as considerably more student writing and more hands-on instruction for science and math.

- Educators in Florida attribute the Florida Blueprint 2000 (created by legislation in 1991) with improving student performance. Evaluators cite required school performance improvement plans and the involvement of parents and community leaders as two key reasons why students and schools are beginning to show positive results.

- Tennessee's Educational Improvement Act of 1992 called for an accountability system based on how well schools are meeting goals in attendance, promotion and drop-out rates, and in annual student proficiency tests. The testing system has received increased scrutiny, and is currently being reviewed for possible technical changes to improve the quality of the data.

Although accountability programs have been in place for just a few years in the South and elsewhere, some lessons have been learned, as reported by the SREB and ECS:

1. Invest the time and effort in getting tests and assessments right, or results will not be useful.

2. Allow sufficient time for thorough start-up planning, and build in time for evaluation so the program can be refined continuously.

3. Make sure programs' objectives and strategies can be easily understood by the public, parents, and educators.

4. Provide help for educators to change the way they teach and assess students.

5. Create a comprehensive accountability system that includes all these components: rigorous standards, assessments, rewards and sanctions, assistance for low performers, and reporting of results.

For an accountability system to work effectively, the public and educators must understand how the whole system works in concert to improve student learning. Proponents must strive for a system with measurable, long-term gains in student achievement.

## *ACCOUNTABILITY PROGRAMS IN SREB STATES*

| | Financial Rewards | Sanctions/ Intervention | School-by-School Report Cards |
|---|---|---|---|
| **Alabama** | -- | districts, schools | under development |
| **Arkansas** | -- | districts | no |
| **Florida** | districts encouraged to develop | districts, schools | yes |
| **Georgia** | schools | -- | yes |
| **Kentucky** | districts, schools teachers | districts, schools | yes |
| **Louisiana** | under development | under development | yes |
| **Maryland** | schools | schools | yes |
| **Mississippi** | -- | districts | yes |
| **North Carolina** | schools | districts, schools | yes |
| **Oklahoma** | -- | schools | yes |
| **South Carolina** | schools | districts | yes |
| **Tennessee** | schools | districts, schools | yes |
| **Texas** | principals | districts, schools | yes |
| **Virginia** | -- | -- | yes |
| **West Virginia** | -- | districts, schools | yes |

## *RECOMMENDATIONS OF THE SUBCOMMITTEE*

**PREAMBLE:** The Subcommittee believes that Virginia's schools have done an increasingly better job over the years in preparing children for both the workforce and for continuing education. Rapidly rising expectations for knowledge and skilled workers in the global economy, however, have put unprecedented demands on our schools to improve performance rapidly. To meet these demands, students and schools need to improve the job they are doing faster than ever before.

The keys to improved performance are : 1) high standards of learning, 2) high expectations for all children, 3) fair and valid assessments against those standards, 4) consequences, both positive and negative, for students and school professional staff (these consequences are frequently called "accountability"), and, absolutely critical, 5) increased capacity to meet the new expectations.

### I. IMPROVED CAPACITY

**It is both unfair and self-defeating to hold students and school instructional staff accountable for significantly improved performance unless and until they have the tools to make the systemic changes. In short, the Subcommittee believes that accountability is contingent upon increasing the capacity of schools and teachers. This should include:**

- Codes of student conduct and alternative classroom settings to ensure that schools are safe and orderly places where teachers can teach and students can learn.

- Additional instructional and remedial time specifically designed to meet the needs of students with different learning styles.

- Professional development for teachers, primarily to enable them to teach the new standards of learning effectively.

- Adequate funding to maintain and enhance teaching and learning, especially in communities with high levels of disadvantaged students or lack of funding capacity.

- Specific programs to encourage the involvement of families in the education of their children.

- Appropriate, up-to-date technologies and facilities.

The subcommittee further believes that an accountability system should report separately on the progress of students with special needs who are not pursuing a regular diploma.

## II. MANAGING STUDENT CONDUCT

**Recommendation: Each locality shall provide an effective continuum of discipline alternatives for disruptive students that ranges from temporary, short-term removal from the regular classroom to referral to the courts. The continuum should provide a safe, non-disruptive environment for teaching and learning for students who observe the rules, and effective opportunities for rehabilitation and education for students who do not observe the rules.**

**Components of the Continuum:**

1. Community/family involvement in the development of codes of student conduct that are signed annually by students and communicated to parents and the community.

2. Establishment of character education programs that emphasize traditional values such as honesty, self-discipline, hard work, respect for the rights of others, pride in self, family, community and country.

3. Enhanced capacity for school personnel to understand and utilize the options for referral to local service providers (social services, health, mental health, etc.).

4. Locally-developed plan (involving families and educators) for dealing with disruptive and disrespectful students, including parental responsibilities and rights

5. Enforcement by local school boards and courts of existing statutory consequences for parents who fail to comply with parental responsibilities (fines, community service, etc.)

6. Authority to remove a student from the classroom immediately -- vested with the classroom teacher. Options include:

    --supervised "time out" rooms in all schools
    --"as needed" interventions for episodic, non-recurring discipline problems: including guidance and peer counseling
    -- attendance/police officers on-site in school with high incidence of serious student problems

7. To the extent permitted by federal law and subject to local school board option, administrators should have the authority to suspend a student for up to ten days or to assign a student to an alternative school setting for up to ten days.

8. Long term suspension and expulsion policy to be determined by local school board. No child should be expelled "to the streets." Options for out-of-classroom sites should include:

    --alternative school programs in separate facilities
    --home-based programs using visiting teachers and distance-learning technology
    --court referral for juvenile detention or other supervision

- Examples include programs in Virginia Beach and Fluvanna County

## III. Encouraging Family Involvement

**Recommendation: Each locality shall encourage the involvement of parents and families in the education of children. A series of four actions is**

**recommended to develop, maintain, and evaluate opportunities for greater family involvement.**

**1. Subject to review by Department and Board of Education, require each school division to establish Classroom Snapshot Program in each school by year 2000. The goal of the program is to provide voice mail communication after regular school hours for both families and teachers through telecommunications.**

How They Work:

- Each classroom teacher (at least at elementary and middle school levels) would be expected to leave a message daily for students and families to access by telephone. Topics would include homework assignments, the day's focus in the classroom, special announcements, general test results, etc.

- Family members would be able to leave comments or requests in voice mailboxes assigned to each teacher.

- Funding requirements are modest and are sometimes donated by local businesses. (For a suburban school district with 15,000 students and 17 schools, the cost was $35,000 as a one-time cost for equipment plus $12,000 per year for line charges.)

- Examples include programs in Hanover County and Norfolk.

**2. Subject to review by the Department and the Board of Education, establish family-teacher councils in every school. The goal of the councils is to give families greater opportunities to learn about and help shape the learning environment in schools, and at the same time to provide teachers with additional avenues for tapping family interest in local schools.**

How They Work:

- Membership comprised of teachers, parents, and administrators. Teachers should have the most representation on the Council. Possible

composition of a Council: 4 teachers, 3 parents, 1 principal. Local school board would determine if members were elected, appointed, or could volunteer to serve on councils. Councils should meet regularly, but at least four times during the school year.

- Minimum responsibilities: to provide school administration with advice and input concerning the school's philosophy, goals, and objectives (as required by the Standards of Accreditation), to monitor student achievement, and to review compliance with student code of conduct.

- Optional responsibilities: as determined by the local school district, could include authority to review and make recommendations or decisions concerning non-payroll school expenditures and instructional materials, the interview phase of the teacher hiring process, to organize and plan parent /teacher meetings, with child care and food available on site to encourage attendance. State would encourage with modest stipend (e.g. $500 per school) for compensating teachers for the extra time required for parent/teacher programs.

- Examples include programs in Prince William County and Virginia Beach

**3. Subject to review by the Department and the Board of Education and subject to available state funding, require schools (or at least those with low levels of parental involvement to establish School-Based Family Resource Centers. The goal of the centers is to increase the family's understanding of and support for what happens in schools by providing information, materials, and education and guidance to family members of students.**

How They Work:

- Oversight by paid paraprofessional for a minimum of 10 hours/week for 40 weeks.

- Separate room or defined area devoted to the Center.

- Information available on the school (courses, resources, graduation requirements, code of conduct, school-to-work programs, extracurricular activities, etc.) through one-on-one discussions, newsletters, course material, computers, videos, etc.

- Special adult classes as needed (GED, English as a Second Language, parenting skills).

- Training for teachers on effective interaction with parents and families.

- Staffed jointly by paraprofessionals and family/community volunteers.

- Open as many hours as possible, at times convenient to parents.

- Examples include programs in Fluvanna and Rockingham counties

4. **As recommended by other subcommittees of the Commission, a state-level research unit should be established in the Department of Education for evaluation studies and the collection and dissemination of "best practices." The unit should include the following in its ongoing plan of work:**

    - Evaluate the success of programs in encouraging the involvement of parents and families.

    - Conduct assessments of changes in student outcomes (behavior, attendance, test scores) as a result of increased family involvement.

    - Annually disseminate to all local districts "best practices" of family involvement programs.

## IV. COMPONENTS OF A TEACHING AND LEARNING ACCOUNTABILITY SYSTEM

**Accountability systems should be contingent upon increasing the capacity of schools and teachers (see Preamble, above). Accountability systems should include:**

- Objective criteria for accountability (i.e. standards).
- Fair and reliable methods for measuring achievement of the criteria (i.e. assessments).
- Appropriate rewards that recognize/encourage positive performance and consequences for unacceptable performance.

**Focus of accountability should be:**

Primary

- Students
- School administrative and instructional staff

Secondary

- Parents
- District level professionals
- School boards
- Individual teachers

**Students should be held accountable for:**

- Mastering the Standards of Learning
- Attendance
- Meeting behavioral standards

**School-level professional, administrative, and support staff should be held accountable for:**

- Student learning as measured by test results
- Student behavior and safety
- Encouraging parental involvement
- Involvement of the local business community in ways suggested by the Subcommittee on Support for Teaching and Learning (e.g. school-to-work programs, curricular and administrative suggestions, funding mutually beneficial projects)

**Individual teachers should be held accountable for:**

- Meeting professional licensing standards
- Maintaining good communication with parents
- Classroom behavior and safety
- Serving as positive examples (appropriate dress, grooming, conduct, etc.)

**School boards and superintendents should be held accountable for:**

- School performance in meeting above criteria
- Effectiveness of superintendent
- Effectiveness of school division staff
- Fostering parental involvement
- Involvement of the local business community
- Enlisting the support of parents and community members to create high performance schools

**Parents should be held accountable for:**

- Student behavior
- Student attendance
- Other parental responsibilities as defined by law

## V. REWARDS THAT RECOGNIZE/ENCOURAGE POSITIVE ACADEMIC PERFORMANCE

**Recommendation: Students, teachers, and schools need to be recognized and rewarded for academic achievement. Rewards and recognition are an important stimulus to improved performance. Costs of reward and recognition programs should be shared with localities if the General Assembly so determines. Recommended methods include:**

**For students --**

- State and local recognition programs
- Fast-track/motivated curriculum
- Early graduation
- Post-secondary scholarships
- School-to-work opportunities, internships with local businesses

**For teachers and principals --**

- Recognition programs
- Designation as "mentor teacher" with salary supplement
- Enriched professional development opportunities
- In the teaching profession, the intrinsic satisfaction of performing effectively (enhanced through the purchase of materials, equipment, and books; and an improved physical environment) is more important to most teachers than individual bonuses or other monetary rewards. (See rewards for successful schools, which follows.)

**For schools --**

- Recognition programs for academic achievement and parental involvement.
- Financial rewards for successful schools. Benchmark to be each school's improvement over prior performance, not comparison to other schools. Amount of reward can be on a per teacher basis. For example, if an elementary school has 35 teachers and the reward is $1,000 per

teacher, the school would receive $35,000 to allocate to programs the teachers and principal believed were important.

- Funds can be capped by the legislature. But in order to be effective, the funds available for school improvement programs must be meaningful and sustained over time. Other states which have tried this and then cut funds to insignificant levels have not benefited.

**For district and district administrators --**

- State level recognition programs

## VI. CONSEQUENCES FOR UNACCEPTABLE ACADEMIC PERFORMANCE

**Recommendation: Students and schools need to be held accountable for unacceptable academic performance. Students who fail to achieve need and may be required to receive remedial help outside of regular school hours. School performance is measured principally by student achievement against prior performance of students in that school.**

**For students who fail to achieve--**

1. Remediation programs, including summer school, available to all students everywhere.

2. Mandated remediation programs (before and after school, Saturday, summer, as locally determined) for all students performing below grade level on the end of course SOL exam.

3. Effective in the 2004-2005 school year, a student who fails the English or math SOL exam at the 5th or 8th grade shall be promoted only when a structured remedial program is designed for the student by the local school division. A second promotion after failure to pass exams shall not be permitted unless the student is identified as (a) a student for whom English is not the native or first language and who has been identified as having limited English proficiency,

(b) disabled as defined in the *Individuals with Disabilities Education Act*, as amended, or (c) has been granted an exception at the discretion of the local school board under guidelines established by such board. -Each school board shall report annually the number of students in each category and the reasons therefore to the State Board of Education.[1]

4. No standard high school diploma if student has not achieved a passing grade on the Algebra I exam or the 11th grade English exam.

5. No participation in Virginia High School Athletic League recognized athletics or extracurricular activities in high school until student achieves proficiency on all four SOL exams at the 8th grade level (current rule based on 6th grade Literacy Passport).

6. A student who drops out of school before age 18 will not be eligible for a driver's license or will have his/her license revoked, absent a hardship as determined by a local judge. Local school boards shall notify the Department of Motor Vehicles of students who fail to maintain minimum attendance requirements.

7. Appropriate alternative school setting or program for "over age" students.

**For schools that fail to achieve**—(See timeline on page 20)

- Three years after results of the first SOL test results are publicly released, any school that 1) meets the accreditation standards of the Board of Education (based on the absolute percentage of main stream students achieving proficiency on the relevant SOL exams), or 2) shows material improvement (as defined by the Board of Education) in any year as compared to the prior two years, shall be fully accredited.

- Any school not fully accredited shall:

    1. Create a Family/Teacher Council (if none exists)

[1] Before the recommendation is adopted by the full Commission, information on the results of similar programs in other states shall be collected, analyzed, and presented to the full Commission.

2. Adopt a corrective action plan, approved by the local board of education and filed with the State Board of Education. Such plan shall (a) reflect review and recommendation for appropriate action including, but not limited to, safety and order, professional development, extended time for remediation, programs to enhance parental involvement, and (b) identify needed additional resources.

- Any school which is not fully accredited and fails to show material improvement, as defined by the Board of Education, over any subsequent three year period, shall

  1. Adopt a corrective action plan approved by the local school board which shall be submitted to and reviewed by the State Board of Education. Such plan shall include a change of principal and other instructional leadership (if none has occurred in the prior three years), a competency examination of teachers who have been teaching in such school for the prior three years, and may include an involuntary reassignment of teachers.

  2. Receive technical assistance from the State Board of Education, and to the extent available, additional state and local resources to meet identified needs.

  3. The school board in which a school is located shall permit the parent of any child enrolled in such school to enroll such child in another school in such district, on a space available basis.

**For individual teachers in provisionally accredited schools --**

- Teachers who have taught for three years or more in any school which has for such period been provisionally accredited shall be subject to annual performance evaluations for as long as the school is provisionally accredited.

## *CONCLUSION*

The Subcommittee on Consequences and Accountability believes that the implementation of its recommendations will have positive effects on student performance in these ways:

1. Parents and families will be more familiar with and supportive of the teaching and learning process and their local school.

2. Students will have a safe and welcoming learning environment.

3. All students will have appropriate opportunities to learn – in the regular classroom or in an alternative educational setting, if necessary.

4. The performance of all students and schools will be measured regularly against standards.

5. Incentives for positive performance will reward high achieving schools and students.

6. Sanctions for poor performance will motivate students to take the learning process more seriously.

7. Poor school performance will be addressed through immediate technical assistance to schools or other types of intervention, if warranted.

The Subcommittee believes that an environment conducive to learning, with the full support of parents, and with the consistent application of incentives and rewards will result in a system of public education that prepares all Virginia students to be productive, satisfied citizens.

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# Appendix D

# Cost Estimates for Commission Recommendations

| Recommendation | Cost Estimate | Notes |
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| 1. The Standards of Learning in all subject areas shall be subject to regular review and revision to (1) maintain rigor in all subject areas and (2) reflect a balance between content knowledge and the application of knowledge in preparation for eventual employment and lifelong learning. | Budget neutral. | |
| 2. The Board of Education shall establish Standards of Learning for an articulated technological studies program in grades K-12. | Budget neutral. | |
| 3. Assessments of student performance shall evaluate critical thinking and the application of knowledge and skills, and the Department of Education, with the assistance of independent nationally-recognized testing experts, shall be responsible for conducting an on-going analysis and validation process for these assessments. The first report of this analysis shall be made to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998. | $20,000 one-time costs for consultant services of 3 national testing experts. | Analysis to be accomplished with existing staff resources. |
| 4. New Standards of Learning for vocational education shall require the full integration of English, mathematics, science and social studies SOL and incorporate a process for assessments, reporting, and consequences. All vocational programs shall be aligned the industry and professional standard certification by the year 2002. | $300,000 annually for assessment development. | SOL development with existing staff resources. Assessment development for completer sequences phased in over a 5-year period for those vocational areas without industry or professional standard certification. |

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| 5. The requirements for a standard high school diploma shall include a concentration of courses selected from a variety of options. This concentration shall be planned to ensure the completion of a "focused career preparation" sequence in career, technical, or arts education developed by the respective school divisions consistent with Board of Education guidelines and be approved by the local school board and the Board of Education. | Budget neutral. | It is assumed that no additional courses will have to be offered by local school divisions. |
| 6. The requirements for a high school diploma shall include one credit in fine arts. | $5.375 million annually in total costs for an additional 125 teachers. | The need for additional staff required by local school divisions has not been finally determined. |
| 7. The Department of Education shall study the feasibility of various methods and tools designed to focus students' attention on future education and career plans, and shall report to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998. | Budget neutral. | |
| 8. The General Assembly should consider legislation which permits, as a local option the formation of a limited number of carefully monitored charter schools within the state's public school system. These schools must admit eligible student applicants based on a lottery system to ensure fairness in attendance policies, and they must comply with all federal and state anti-discrimination laws, regulations, and court orders. They will not be exempt from the Standards of Quality, Standards of Accreditation, or Standards of Learning. Teachers in charter schools must be licensed to teach. | Budget neutral. | |

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| 9. Effective after June 2001, graduates of Virginia institutions of higher education will be licensed as teachers only if the endorsement areas offered at such institution have been assessed by a national accrediting agency or by an enhanced state approval process with final accreditation by the Board of Education. | $148,500 annually for 2 professional staff and one support staff at the Department of Education. | |
| 10. To encourage talented students, particularly minorities and men, into teaching in shortage areas, the Teaching Scholarship Loan program shall be expanded by providing 200 scholarships per year to eligible candidates. | $600,000 annually in general funds. | |
| 11. Clinical faculty and mentor teacher programs shall receive increased state support. | $150,000 annually for clinical faculty.<br>$800,000 in year 1, $1.1 million in year 2, $1.4 million in year 3, and $1.7 million in year 4 for mentor teacher programs. | 500 clinical faculty positions with $300 stipend. 1,000 mentor teachers trained at $500 per teacher with $300 stipend. |
| 12. The Department of Education shall provide and teachers shall participate in intensive training to prepare those teachers who teach the revised English, mathematics, science, and social studies Standards of Learning in instructional methods that recognize different learning styles and teach children how to apply knowledge.<br>This training shall include a one-time intensive three-week training program of professional development over a four-year period that focuses not only on the four core SOL, but also on (1) teaching strategies and methodologies that emphasize application of knowledge, linking assessment with instruction, (2) the use of technology for instruction, (3) working with parents, and (4) technological studies. | $31.5 million is the state cost over four years for training 60,000 teachers.<br>$750,000 one-time expense in general funds for training the trainers.<br>$6.7 million in state funds over four years for payment for the trainers. | Costs for training in technological studies and working with parents to be estimated. |

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| 13. A program of lead teachers in mathematics, science, technological studies, English, and social studies shall be established and maintained to provide support for elementary and secondary school teachers. The program shall be phased in over a ten-year period, beginning with mathematics and science lead teachers in elementary and middle schools in 1998-2003. | $22.8 million is total annual cost for released time for lead teachers.<br>$2.5 million to train lead teachers the first year, and #1.3 million the second. | |
| 14. The Board of Education shall establish leadership standards for superintendents and administrators, and shall provide leadership training programs that superintendents and administrators are required to successfully complete as a condition of licensure. | $900,000 in general funds annually for a Principals' Leadership Institute.<br>$400,500 in general funds annually for Superintendents' Leadership Development program. | Leadership Institute estimate is based on training principals and assistant principals. Superintendents' program would provide professional development for current superintendents and internships for aspiring superintendents. |
| 15. The Department of Education in collaboration with professional organizations involved in teacher education shall undertake a study of the feasibility of a one-year internship as the first year of teaching following completion of a teacher education program, and shall report to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998. | Budget neutral. | |
| 16. Each school division should implement a full-day kindergarten program for all children. | $9.2 million in state costs. | Affected local school divisions would have an increase in required local effort and may also experience some additional capital costs. |
| 17. The General Assembly shall expand the four-year old at-risk preschool programs to cover to all eligible students in all schools. Additional funds are required to serve 100 percent of eligible 4-year-old students, including those currently served in Virginia public schools through local or Title I funds. | $30.3 million annually in general funds. | Local share would be $18.7 million. |

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| 18. The General Assembly shall appropriate sufficient funds to expand the K-3 class size initiative to bring schools with 50 to 69 percent Free Lunch participation from the current 18 students per teacher to 15 students per teacher in the 1998-2000 biennium, effective the first year to reflect the primary goal of K-3 programs of striving to ensure that 95 percent of all student groups are reading at grade level by the end of grade 3. * | $13.9 million in fiscal year 1999 and $14.0 million in fiscal year 2000 in state costs for K-3 class size initiative. | Localities would also have an increase in required local effort for the K-3 class size initiative. |
| 19. An incentive grant program to assist low-performing schools shall provide funds for implementing successful reading programs such as Reading Recovery and Success for All.* | $2.5 million for incentive grant program for low-performing school divisions. | Reading Recovery and Success for All programs cost about $2,500 per student; the grant program can serve 1,000 students. |
| 20. School boards shall provide, and students who fail to achieve a passing score on the Standards of Learning exam in grades 3, 5, and 8 shall be required to attend remediation programs held outside of normal school hours.* | Between $7.7-10 million in state costs annually. | To provide 2 hours of after-school remediation for 36 weeks a year to estimated 38,250 students who will fail one or two SOL tests in grades 3, 5, and 8. |
| 21. School boards shall provide summer school remediation for all elementary and middle school grades and for all high school academic courses.* | $12.6 million annually in total costs. | To provide summer schools for 38,250 students failing one or more SOL tests at $328 per student. |
| 22. The General Assembly should fund an Innovative Grant program recommended by the Joint Subcommittee Studying Remedial Summer School.* | $1.0 million annually in general funds. | Cost of 10 pilot projects. |
| 23. The Board of Education shall set minimum standards for remediation courses. | Budget neutral. | |
| 24. School boards shall biennially review the model student conduct code to incorporate a continuum of discipline options and alternatives to preserve a safe, nondisruptive environment for effective teaching and learning. | Budget neutral. | |

* Potential source of funding: Governor's remediation funding recommendation of $31.5 million.

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| 25. The Board of Education shall develop guidelines in the recommended number of alternative settings per 1,000 middle and high school students and the average incremental cost thereof and shall report the guidelines and the fiscal resources necessary to implement them to the House Committees on Education and Appropriation and the Senate Committees on Education and Health and Finance by December 1998. | Budget neutral. | |
| 26. A research unit for the collection and dissemination of information regarding "best practices" shall be established within the Department of Education to serve as a resource for school divisions, especially those with less than a 70 percent pass rate on the Literacy Passport Tests and the Standards of Learning tests. | $1.2 million annually for 20-member staff. | This figure is 70 percent (because it will be serving 70% of the school divisions) of the estimated cost given by the Department of Education to set up such a unit. |
| 27. The Department of Education shall include in the Outcome Accountability Project report, made annually to the public on the progress of Virginia's schools in improving or failing to improve student learning performance, an analysis of the strengths and weaknesses of public education programs in the various school divisions in Virginia and shall make recommendations to the General Assembly for further enhancing student learning uniformly across the Commonwealth. | Budget neutral. | The analysis and report will by generated from the Outcome Accountability data and other data provided by the research and evaluation unit of the Department of Education. |
| 28. The Department of Education shall conduct technical assistance visits to low-performing school division on an established cycle. Schools accredited with a warning must be given priority for technical assistance that begins with analysis of relevant school data and continues through the development and implementation of an improvement plan. | $700,000 annually in state funds. | This figure is 70% of the $1,006,360 estimated by the Department of Education to provide technical assistance to all school divisions. The 70 percent refers to the percent of school divisions not achieving 70% pass rates on the LPT. |

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| 29. The Department of Education in collaboration with the Center for Innovative Technology and other high technology companies in Virginia shall assess the technology needs of local school divisions and establish guidelines for connectivity, including school local area networks; architectural models, definitions for local versus shared services such as video bridges), and leveraging volume purchase agreements with the ultimate result that the Commonwealth is connected through a network infrastructure to support K-12 school initiatives for the 21st century, provide access for voice, data, and video telecommunications, and enhance the educational equality and experience for all Virginians, regardless of location in the Commonwealth. The Department shall report the results of the needs assessment and the guidelines to the House Committees on Education and Appropriation and the Senate Committees on Education and Health and Finance by December 1998. | $20,000 in one-time consultant fees. | The DOE and CIT would absorb most of the costs of the study in their budgets. |
| 30. Proficiency in educational technology shall be a condition of licensure for all teachers in Virginia's public schools, and the General Assembly shall provide grants for implementing the recommended technology infrastructure, hardware and software for teacher education programs in public institutions of higher education in the Commonwealth. | Cost estimates will have to be further evaluated, if the General Assembly wishes to act on this recommendation during the 1998 session. | |
| 31. Staffing levels outlined in the Standards of Quality shall require that the employment of at least one full-time educational technology expert per school division. | $3.4 million annually in state costs. | Local school divisions would have an increase in required local effort. |
| 32. Each school division shall establish a voice mail communication system after regular school hours for parents, families, and teachers by the year 2000. | $200,000 one time in state grants. | $10,000 grants to assist the 20 lowest performing school divisions on the Literacy Passport Tests. |

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| 33. The General Assembly shall provide 2 competitive grants per superintendents' region to schools and school divisions to plan, develop, promote, and expand meaningful family/community involvement programs designed to facilitate parents' creation of supportive learning environments at home and involvement in their children's learning at school and in school activities. | $160,000 in one-time state grants. | To provide 16 $10,000 grants. |
| 34. The Commonwealth shall require and fund pre-service and in-service programs for teachers, principals and administrators designed to strengthen educators' ability to communicate and work with families and help families become involved in their children's learning at home and school. | $100,000 in one-time state grants. | $5,000 grants to the lowest-performing school divisions on the Literacy Passport Tests. |
| 35. The Department of Education shall gather and disseminate information and provide resources for implementing family/community programs, including information on potential private funding, support sources, and existing exemplary programs. | Budget neutral. | Research and evaluation unit will collect and disseminate information. |
| 36. To enhance on-going partnership efforts between schools and business, the Board of Education shall establish a new program of 16 pilot grants to provide incentives for partnerships between school divisions and local business and industry that focus on teaching higher level skills and the application of new knowledge. | $200,000 annually in state costs. | To provide 16 $12,500 grants. |
| 37. Local school boards shall be required to establish local business advisory councils. | Budget neutral. | |
| 38. A statewide business advisory council shall be established to advise the Governor and the Board of Education regarding workforce and education issues. | $30,000 annually in general funds. | To provide travel and meeting expenses for the new council. |
| 39. The Commonwealth's accountability initiative shall include a system of state and local incentives or rewards for students. | $ 105,000 annually in general funds. | 8 regional recognition dinners for 100 students at $100/student. State recognition dinner for 100 students at $250/student. |

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| 40. Effective for the 2004-2005 school year, promotion of any student failing the 5th or 8th grade English or mathematics SOL examination shall be contingent upon the school's provision of and the student's participation in a structured remedial program. A second promotion after failing to pass one or both exams should be granted only in specific situations, such as for certain ESL students and students with disabilities, and the school shall advise the public and the Board of Education of the number of such exceptions granted. | Remedial programs are addressed in Recommendations #19-22. | |
| 41. A system of state and local recognition, including both incentives and consequences, shall be established for teachers and administrators. | Clinical faculty, mentor teacher, and lead teacher programs are addressed in Recommendations #11 and 13.<br>$10,500 annually in general funds. | Regional recognition dinners for 10 teachers at $100/teacher. State recognition dinner for 10 teachers at $250/teacher. |
| 42. Teachers who have taught for three or more years in any school which for such period has been provisionally accredited shall be subject to annual performance evaluations for as long as the school remains in that accreditation status. | Budget neutral. | |
| 43. A system of state and local incentives or rewards shall be created for schools demonstrating excellence or showing significant improvement toward clearly stated goals, including academic performance and family involvement. | $25 million annually in state and local costs. | Based on one-third of teaching force, or 25,000 teachers with $1,000 awards. |

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| 44. School divisions with schools demonstrating a passing rate of less than 70 percent on all three Spring 1998 Literacy Passport Tests by students taking these tests for the first time shall develop a comprehensive corrective action plan with and for each school during 1998-99 for implementation no later than 1999-2000, including specific goals for improvement and shall receive technical assistance from the Department of Education in implementing this plan. The affected schools shall be rewarded for achievement of their goals. | Budget neutral. | Technical assistance addressed in Recommendation #27. |
| 45. The Virginia Code Commission shall undertake a recodification of Title 22.1 to ensure clarity, uniformity, and consistency in Virginia's public education statutes. | Budget neutral. | |

# Appendix E
# Notes on State Assessment Issues

compiled by Helen Rolfe, Project Manager
VA Commission on the Future of Public Education

The issues addressed in these notes are ones that concern us in Virginia as we develop a vision and mission for public education in the 21st century and the strategic plan to implement the vision. A major concern relates to ensuring that students are assessed on how they can apply or use the knowledge they have learned.

"The fundamental rationale for changing the nature of assessment in the United States is that different modes of assessment can better facilitate student learning" (Linn, R. L. (1995). High-Stakes Uses of Performance-Based Assessments: Rationale, Examples, and Problems of Comparability. In T. Oakland and R.K. Hambleton (Eds.), International Perspectives on Academic Assessment (p. 71). Boston: Kluwer Academic Publishers.)

**Test Item Format**

"The kind of knowledge most easily measured using [multiple-choice, objective] items is recognition of facts. With care and creativity, multiple-choice items can be constructed to measure more complex understandings, but fundamentally they are limited to 'convergent' thinking processes. There must be **a single correct answer** [emphasis added] (or set of correct answers) to be selected from a list provided. This alone places a basic limit on the ranges of knowledge and skills that multiple-choice questions can measure" (Haertel, E. H. (1990). Form and Function in Assessing Science Education. In A. Champagne, B. Lovitts and B Calinger (Eds.) Assessment in the Service of Instruction, Washington, D.C.: American Association for the Advancement of Science, p. 18.)

"Items calling for students to write brief essays or descriptions of experiments, or to propose multiple possible explanations for a phenomenon are free-response items that might be used to measure forms of learning that it is nearly impossible to measure by using items calling for no more than a selection among fixed alternatives" (Haertel, p. 18).

"Poorly designed external tests—instruments that measure no more than superficial understandings or factual recall—are worse than no tests at all. They cannot provide valid information about the relative or absolute success of different educational programs or systems, and they jeopardize sound curriculum and instruction" (Haertel, p. 19).

"Students must be asked to *generate* [emphasis in original] their responses, at least some of the time, and some items must call for more than a few words or numbers by way of an answer" (Haertel, p. 20).

"Prompted by a growing concern that the kinds of skills needed for success in the 21st century go beyond those that are typically taught and assessed in traditional educational settings, states have been revising...the forms of assessment they use to measure mastery of [their] student goals....States have explored alternative forms of assessment, which require students to produce answers rather than simply select correct answers" (Bond, L., Roeber, E., Braskamp, D., (1997), Trends in State Student Assessment Programs: Fall 1996 Data on Statewide Student Assessment Programs, Washington, D.C.: Council of Chief State School Officers, p. 9).

"Twenty-three states report having at least one assessment component that includes no multiple-choice items" (Bond, et al., p. 11).

"Political battles, concern over so-called "non-objective" and "intrusive" forms of assessment, high costs, and technical difficulties seem to be at the heart of many of the concerns expressed about alternative assessment activity... Despite these roadblocks, the amount of state activity in the development and use of alternative assessment items is considerable." Bond, et. al. report that 12 states are developing or have developed hand-on performance tasks, and 7 states are developing projects, exhibitions and demonstrations. "Clearly the benefits of this form of assessment are great enough for states to work toward overcoming the barriers" (Bond, et. al., p. 13).

"Multiple-choice assessments require students to select a "right"answer from among several "wrong" answers...Open-ended assessments that require students to generate their own solutions to assessment problems or tasks are becoming increasingly necessary to assess new learner outcomes that call for more complex applications of knowledge and skill" (Bond, et. al., p. 13).

"It would appear that where states have implemented performance assessment as a slow and deliberate process without much fanfare, their programs have been spared... Most of the states that report a lack of major difficulties implementing non-traditional assessments tend to use their assessments as end-of-course exam...early-childhood screening,...career/employability skills assessment,...instructional planning tools. All of these are fairly low-stakes purposes, meaning that consequences of poor performance are not severe for students, skills and/or teachers. State assessments seem to come under attach most often when the use of the test results is high-stakes — student graduation, school accreditation, school takeover, etc." (Bond, et. al., p. 15).

In addition to multiple choice items, the 1996 National Assessment of Educational Progress (NAEP) mathematics assessment included

- short constructed-response questions — questions that asked students to provide the answer they calculated for a numerical problem or to write a sentence or two describing the solution to a problem; and
- extended constructed-response questions that required students to produce both a solution and a short paragraph describing the solution or its interpretation in the context of the task.

In 1990 students spent about 30 percent of testing time on constructed-response questions. By 1992, this percentage had increased to 35 percent, and in 1996 it exceeded 50 percent of the time spent by students on the assessment (Reese, C.M., Jerry, L., and Ballator, N., NAEP 1996 Mathematics State Report, Washington, D.C.: U.S. Department of Education, 1997, p. 2).

The Third International Mathematics and Science Study (TIMSS) tested 4th and 8th grade students in 41 countries. The assessments were one and a half hours in length and included multiple choice, short answer and extended response items. Each test booklet included items of all three categories. Extended response items were expected to take 20 minutes of the testing time (Arie van der Ploeg, North Central Regional Educational Laboratory, personal communication, 8/19/97).

"A performance assessment component of end of year tests and high stakes tests is necessary. Extended response math questions more closely approximate TIMSS and keep the exam from being factoid only" (Dr. Margaret Cozzens, personal communication, 8/19/97).

"I favor the use of some constructed response items, because they can be designed to be reliably scored and they have a positive impact on the way teachers teach and assess their students" (McMillan, 8/25/97).

"The format should include a mix of item: selected response (multiple choice), constructed response, and performance items" (Robert Gundling, educational assessment specialist, PA Department of Education, personal communication, 8/4/97).

"I don't like this plan [to withhold a high school diploma if students fail any of the 6 or 9 required high school exams] at all... There are millions of young people who are very intelligent who freeze at test taking times and cannot perform very well. We have to take academic-based portfolio assessment into serious study. Children and teachers and schools have to be judged on more than tests" (Linda Mims, SC SDE, personal communication, 7/26/97).

Performance task example: A fifth grade task asks the student to figure out if

the school can raise $200 for a school banner in a 6-week time frame. Using a chart on aluminium can recycling and responding to a number of specific questions, the student figures out the conditions necessary to reach the fund-raising goal, and then writes a brief feasibility statement to present to the student council (Maryland State Department of Education, Maryland School Performance Assessment Program, Fact Sheet 6, March 1997, p. 1.)

"Although they have a strong advantage of illustrating better approaches to teaching and learning, alternative assessments may be less reliable for reporting individual student or school results, and certainly are more expensive" (Bond et. al., p. 27).

"Another approach to broader content coverage is the use of every-pupil matrix sampling design...useful where school and district information are more important than individual student results " (Bond et. al., p. 27).

North Carolina's new assessment for grades 3-8 in reading, mathematics, and social studies uses a combination of multiple-choice items and open-ended questions; in grade 4 students produce a writing sample (McDonnell, Lorraine, 1997, The Politics of State Testing: Implementing New Students Assessments, CSE Technical Report 424. Los Angeles: National Center for Research on Evaluation, Standards, and Student Testing.

"Very few states use sampling for accountability, public reporting and program improvement, even though this technique provides accurate data, is less expensive and less intrusive, and allows greater use of portfolios and performance assessments" (Neill, M. (1997). Testing Our Children: A Report Card on State Assessment Systems. New York: Natioanl Center for Fair & Open Testing.)

**International Assessments**

In TIMSS the U.S. children showed dramatically different results between 4th graders (2nd out of 41) and 8th graders (21st out of 41).

"My strong suspicion is that the differences are not the kids, but the different way that we teach 4th and 8th graders. Attempting to teach complicated subjects in 30-45 minute segments, as we do for 8th graders, doesn't work very well. Curricula are different: we don't start geometry until 10th grade, [Asian and European countries] do it in 7th and 8th grade. No wonder, then, that their 8th grade math performance, particularly in geometry, is better than ours" (Douglas Reeves, director. Center for Performance Assessment, 8/20/97).

"Teaching practice is remarkably different. The 500 hours of videotape of

teaching practice make clear that when we say we teach "problem-solving" it frequently means that the teacher tells the class how to solve a problem. Japanese "problem-solving" means that the teacher poses a problem and allows students to struggle with it. This study [TIMSS] shows that problem solving worked not only to help student performance on the extended response items, but also on multiple choice items -- a strong reason we should use both methods of testing" (Douglas Reeves, 8/20/97).

**Test Development Time Period**

Since November 1996 27 tests have been developed for the high stakes accountability program in Virginia. The tests are listed below:

| Grade | No. of Tests | Subjects |
|---|---|---|
| Grade 3 | 4 | English, math, history, science |
| Grade 5 | 6 | English, math, history, science, writing, technology |
| Grade 8 | 6 | English, math, history, science, writing, technology |
| High School | 11 | English (2), Algebra I, Algebra II, Geometry, Earth Science, Biology, Chemistry, World History to 1000 AD and Geography, World History 1000 AD to Present and Geography, and U.S. History |

What are possible implications for the quality of these tests, given the extremely compressed development time?

"If history even moderately predicts the future, the quality of the assessments developed in that sort of time frame will have problems. Check out the consequences of a similar assessment development schedule in a report by CRESST/Arizona State University researcher Mary Lee Smith, CSE Technical report, 424, Reforming Schools by Reforming Assessment: Consequences of the Arizona Student Assessment Program (ASAP)" (Ron Dietel, researcher at CRESST, personal communication, 8/18/97).

"I can only imagine that the majority of the ground work was already done prior to the contract... Content/performance standards project, item banks, item writing teams, piloting and testing teams, standards/curriculum/assessment/ accountability mapping committees etc. had been already well in progress [in our state] before the test development/improvement contract went out" (N. Chern, principal planning consultant, Center for Planning, Policy and Resource Management, Illinois State Board of Education, personal communication, 8/18/97).

Most of the work was not done in advance. Content standards had been adopted, but there was no item bank developed around these particular standards, item writing teams were identified at the time the contract was let, no field testing or piloting had occurred. Doesn't this seem a rather compressed test development timetable?

"Indeed, a compressed and miraculous timetable. I hope the state won't face too many legal challenges. Careful as we are in Illinois with the state tests since 1985, we have to defend the tests and their uses a few times too many" (Chern, personal communication, 8/20/97).

"Unless the manpower is sufficient, there are bound to be shortcuts that affect the quality of the tests. One issue to raise is whether the VDOE is monitoring the contract to assure compliance" (James McMillan, professor, VCU, personal communication, 8/19/97).

"The current plan is way too fast. Each subject test needs at least 2 years of development and refinement before being implemented" (McMillan, 8/25/97).

"I think the development period is between 5-7 years to be effective and to avoid switching the program with a new administration. Implementation includes pilot testing, field testing, and administration of the tests themselves.

"It is equally important to ensure there is appropriate professional development tied to the assessment and there is funding for research and on-going development of the assessment. It should be viewed as a continuous work in progress" (Robert Gundling, educational assessment specialist, PA Department of Education, personal communication, 8/4/97).

"Implementation: Slowly. Low stakes at first. Don't be afraid to admit/rectify errors on the initial administrations. Let *teachers* know that you are using their input to get a viable final product. Teacher buy-in/participation is *essential*" (Leroy Christopersen, district assessment coordinator, Klamath Falls, OR, personal communication, 8/1/97).

## Setting Cut Scores

"The Michigan Educational Research Association is presently protesting a high school test in use in Michigan. Reaching a cut score gets the student a Proficient stamp on his/her diploma. The cut scores were set using a modified angoff method. We think the cut scores are artificial. We think the test should be given to a sample of adults, preferably young adults that would be recommended by business and colleges as models. Then the cut scores might at least have some defensibility" (Jim Rudolph, Boyne County Research Services, Petoskey, MI,

personal communication, 8/5/97).

"After you get a valid, accepted instrument, make *reasonable* cut scores. It is better to err on the low side for the initial cut scores, then gradually raise them, than to turn the educational community off by setting unrealistic standards" (Christopersen, 8/1/95).

**Consequences**

North Carolina has attached few tangible consequences to test results. State takeover is not a realistic threat for most districts (McDonnell, 1997, p. 8).

"The higher the stakes, especially for individual students or teachers, the greater the need to be able to demonstrate that the assessments meet high standards of technical quality" (Linn, R. L. (1995). High-Stakes Uses of Performance-Based Assessments: Rationale, Examples, and Problems of Comparability. In T. Oakland and R.K. Hambleton (Eds.), International Perspectives on Academic Assessment (p. 56). Boston: Kluwer Academic Publishers.)

**Legal Challenges**

"It will be important to demand specific test specifications to know which SOLs will be tested and which won't. If the reply is that students are responsible for "all" SOLs then the test must sample all of them. If they sample all the SOLs, instruction will be focused on drill on the SOLs to the exclusion of other important topics. It's kind of like saying to students that they are responsible for the "whole book" when you only test on a portion of it. I don't think it will stand the legal challenges" (McMillan, personal communication, 8/19/97).

"One issue to ask about is the extent to which the tests and cut scores will withstand legal challenges. On cut scores, it all depends on who the judges are. this is more important than even the difficulty of the items, because in the end standards are arbitrary and a matter of professional judgment. There are systematic approaches for setting cut scores; it can't be simply some percentage that sounds good, e.g., 70%. Again, there is legal precedent" (McMillan, personal communication, 8/19/97).

"A general philosophy about litigation: It isn't whether you will be sued, but rather by whom you will be sued. Litigation is inevitable. Policymakers can only attempt to be sure that they choose their plaintiffs wisely" (Douglas Reeves, personal communication, 9/2/97).

"Fundamental fairness derives from the substantive due process clause of the

fourteenth amendment. According to this requirement, assessments must adhere to professional requirements, be valid, reliable and fair, avoid arbitrary or capricious procedures, and provide all students with conditions fostering an equal chance for success (*United States v. South Carolina,* 1978; *Debra P. v. Turlington,* 1983)" (Phillips, S.E., (1996). "Legal Defensibility of Standards: Issues and Policy Perspectives," *Educational Measurement: Issues and Practice,* 15(2), p. 7.

In California there were differing expectations for the new assessment program, and the immediate result was that the "SDE agreed to produce individual-level test scores within a time frame that exceeded its technical capability...Time became one of the major constraints imposed as a result of state policymakers' fundamentally different notions about the purposes of assessment" (McDonnell, p. 22).

**Assessment to Drive Instruction**

"One of the explicit goals of these [new] assessments [in California, Kentucky, and North Carolina] was to change teaching, and several decades of implementation research indicated that such change could not occur unless teachers were given sufficient training and the time needed to adapt new approaches to their classroom routines (Fullan, M. (1991). The New Meaning of Educational Change. New York: Teachers College Press; McLaughlin, M. (1990). The RAND Change Agent Study Revisited: Macro Perspectives and Micro Realities. *Educational Researcher,* 19(9), 11-16.) Yet the average teacher in the three states received very little professional development in preparation for the new assessments" (McDonnell, p. 25).

"The 1994 California Learning Assessment System (CLAS) results were released, showing extremely poor achievement among those students who were tested. For example, more than 40% of the tenth graders tested in mathematics scored at the lowest of the six performance levels, meaning that they had 'little or no mathematical thinking and understanding of mathematical ideas'...Debate continued...over whether the curriculum embodied in the state frameworks and CLAS had ever really been implemented in classrooms and thus given a fair test of its effectiveness " (McDonnell, p. 49).

"The strong desire on the part of [California] SDE officials to use the test as a lever to shape the curriculum led to a development process dominated by curriculum experts, psychometricians, and teachers who subscribe to a constructivist mode of pedagogy. It was an insular process with no public involvement" (McDonnell, p. 51).

"During the 1994 legislative session, the political and business elites who support KERA [Kentucky Education Reform Act] mobilized to blunt the opposition

and ensure the reform act's continued implementation....So, KERA and the accompanying state assessment have been given something rare in education reform—at least eight years to be implemented and to show results with only modest revisions and a firm political commitment to 'stay the course'" (McDonnell, p. 58, 59).

"So what can a state do to...pursue a reform agenda anchored in common curricular standards and new forms of assessment? ...three important lessons:
(1) Decide whether the state is ready to make fundamental changes in curriculum and testing like those in California and Kentucky or whether a more incremental approach like North Carolina's is preferable.
(2) If a state does decide to take the California and Kentucky route, strong political leadership is necessary. Political support needs to reflect a long-term commitment that recognizes that implementing a reform as complex as new curriculum and testing will take time...Improvements and changes are inevitable...
(3) The development of new curriculum standards and assessments cannot be solely a technical process with participation limited to experts...[they] require open, public deliberation (McDonnell, pp. 68, 69).

# Appendix F

# What is Technological Studies?

**prepared by**

**Virginia Technology Education Association**

# What is Technological Studies?

Technological studies provides the opportunity for students to learn about the knowledge and processes related to technology that are needed to solve problems and extend human capabilities. In terms of formal education, it is a school subject that emphasizes employing the processes of design and problem solving and learning the knowledge base required to produce and analyze technology. It is the study of how to manage, understand, and use technology in all its forms and dimensions.

No longer is a happenstance approach to the learning of our human-created or human-modified world suitable or appropriate as it was when technologies were simple and personal. A coherent course of study for all students in kindergarten through 12th grade that considers technology's knowledge base, processes, and contexts is required to produce citizens who are contributing members of our society.

Instruction in technological studies provides opportunities for students to learn how to think technologically. The term "technology" has been overused and sometimes abused. It once meant the act of knowing how to accomplish a task using practical knowledge. Most recently, it has come to be known as innovations such as informational technology, computers, bio-technology, or some human activity that makes a profound change in the world. Our society is in the midst of creating profound new technologies — the electronic media and genetic engineering are good examples, though there are many others — that raise questions that humans have never before had to answer. Students engaged in design and technology activities over many years will begin to develop the technological literacy necessary to understand, use, and manage technology effectively.

Technological studies focus on the fundamentals of technology instead of exclusively on specific processes and techniques. It gives students explicit and lengthy experience in design as they formulate solutions. They learn analysis and interpretation as they judge their work and that of others. Students practice their knowledge and abilities in communication when they tell other people about their designs. They learn teamwork when they collaborate. Moreover, because technological studies should be experience-based (hands-on and minds-on), it brings school out of the realm of the distant and abstract and into the practical world. Students see there is a use for the things they learn in other classes.

Schools are the best place to learn about technology — its manifestations and impacts as well as design, collaboration, revision, testing, and communication — about all the many elements that are part of modern technology. Schools offer students a chance for a comprehensive education in technology, one that is rigorous, meticulous, far-ranging, and responsive to their questions and needs. It is in schools where students in kindergarten through 12th grade can learn to think critically, comprehensively, and creatively about technology.

Unfortunately, technological studies is often confused with other forms of education, including computer training and educational technology. Educational technology is concerned with improving the teaching and learning process and it is often associated with using computers

in the classroom, having adequate connections to the World Wide Web in schools, and providing proper orientation to the use of technology by students. Computer training provides students with experience in how to properly use computer hardware and software. Technological studies is a school subject involved in the study *of* technology and is often referred to as technology education. Educational technology and computer training teach *with* technology. While all of these are important, the long term educational effect of the study of technology has a lasting benefit for students in that it prepares them to live and be productive with evolving technologies as a citizen of the future. (See Table 1). (Technology for All Americans Project, 1997).

**Table 1. Technological Studies and Educational Technology**

| Technological Studies | Educational Technology |
|---|---|
| • Teaches *about* technology<br>• Is a school subject<br>• Ultimate goal:<br>Technological literacy for everyone | • Teaches *with* technology<br>• Is a teaching method<br>• Ultimate goal:<br>Improving the process of teaching and learning |

**What Should the Technological Studies K-12 Model Look Like?**

In the elementary grades, students would begin to explore their technological world using innovative curriculum materials such as those developed by the NASA-funded *Mission 21* Project or those developed by Project UPDATE. At the middle school level, they might utilize the NSF-funded *Technology, Science, Mathematics Connection Activities* (Glencoe/McGraw-Hill, 1996), developed at Virginia Tech. At the high school level, students would likely focus on more specific areas of technology for which a variety of curriculum materials could be used or adapted. More specifically:

**Elementary Level Technological Studies:** Hands-on problem-solving activities that involve a wide range of tools, materials, and processes integrated into the core curriculum (i.e. math, science, language arts, social studies, fine arts, and physical education). Typical activities might include: Second grade students apply concepts of balance and gravity in designing, constructing, and evaluating a cardboard spinning top; Fifth grade students solve a game design problem that requires them to apply principles of electricity and magnetism.

**Middle School Technological Studies:** Hands-on engineering-like activities that integrate principles of science and mathematics with the technological tools, materials, and processes is included in technological studies. Parallel activities with language arts and social sciences would also be a critical component. For example: Sixth grade students design, construct, and evaluate model gliders that apply principles of

aerodynamics and flight; Seventh grade students design, construct, and evaluate a magnetic levitation vehicle timed with computer sensors and documented on the WWW; Eighth grade students use CAD to design a product, which they then manufacture in class using CAD-designed jigs and fixtures. At the middle school level (grades 6-8), three Virginia Department of Education publications have identified curriculum content and methods to be built upon: *Introduction to Technology*, *Inventions and Innovations*, and *Technological Systems*.

**High School Technological Studies:** Courses would focus more upon specific technological areas. Activities would continue to involve design under constraint, but with considerably greater sophistication and incorporating more scientific principles. Course titles might include *Communication Systems*, *Manufacturing Systems*, *Computer Control*, *Energy Systems*, *Transportation Systems*, etc. Broader course titles include *Introduction to Engineering*, *Design and Technology*, *Technology Assessment*, and *Technology Transfer*. (Brusic and Sanders, 1997).

## Detailed Examples of Technological Studies at Different Levels

The following are four vignettes or verbal snapshots of what may be happening in technological studies classrooms or laboratories at four benchmark levels (grades K-2, 3-5, 6-8, and 9-12). While these represent what may be viewed by an outside visitor, they do not depict the overall richness of the curriculum on a day-by-day basis over the total school year.

**Benchmark Vignette for the Utilization of Technology**
**Grades K-2**

BUG BUGGY

"Mrs. Johnson, can I bring my praying mantis to school tomorrow? I found it on my mom's car this morning. We put it in a jar at home. It's really a big one!"

The enthusiasm written on the young girl's face and the plea in her voice left me little room for denial.

"That sounds great, Susan. but you know the rule about glass jars on the bus. They aren't allowed, and you know why. We've talked about that before. They're just too dangerous if they break."

"I know. But what can I do? We don't have anything else I can use."

The dilemma faced by this eager, budding engineer was not new. Frequently, children long to share their small insect friends with others, but transportation to school is a problem.

Perhaps there is a technological solution: A BUG BUGGY!

"Maybe we can make something in school today to help solve your problem, Susan. Let's try to make a container that you could use to transport or carry your praying mantis tomorrow. We could call it a Bug Buggy, like a baby buggy, only much smaller, and for your little friend."

"Let's do it, Mrs. Johnson!! That sounds great! But how do we make it?"

"Well, that's a good question. Let's gather the class and begin telling about what we need in our bug buggy. You can start thinking about it now. Let me know later about the ideas you get, and we can share those when we talk with the class."

"Okay, I'll start thinking!"

A short time later, Susan shared her story and ideas with the class. Together, we discussed suggestions for components of the container, and finally agreed that it should have a handle (to help carry it) and an opening with a cover, made so that air could get in, without letting the insect get out! With those requirements in mind, busy minds and hands began planning, designing, and producing an assortment of Bug Buggies. As time passed, we shared our progress, problems, successes and failures.

With the support of her classmates, Susan finally selected a Bug Buggy to take home. We would have to wait and see just how successful our solution had been.

**Benchmark Vignette for Systems**
**Grades 3-5**

## THE BICYCLE AS A VEHICLE FOR LEARNING

The critical question of how the various parts of a system work together is being explored through an object that children the world over are familiar with: the bicycle. Mrs. Brown chose the bicycle as an appropriate system because the children had recently learned that large numbers of people all over the world rely on bicycles for their personal transportation needs in a technology/social studies unit. The students had also learned that other modes of transportation (e.g., automobiles) consume scarce resources and pollute the environment. An important opportunity also presented itself yesterday when Alice asked why Megan's bicycle was easier to ride uphill than her's was (they both had new ten-speed bicycles).

The discussion was initiated when Mrs. Brown asked the class to explain how a bicycle works. Bob volunteered that you just get on and ride. OK, but what is happening when you are riding? Caitlin said, "Well, you are pedaling, and that makes the wheels go." "But if you don't steer you will crash or tip over," Alice added.

Pointing to the bicycle, Mrs. Brown restated the children's comments by observing that there are really several things happening at the same time while you are riding the bicycle. First, the rider is pedaling and steering, the wheels are turning, and the bicycle is moving. This is very similar to the way many technological systems operate. There is an *Input*, in this case, the rider pedaling the bicycle. Then there is a *process*, or something happening. "What do you suppose is the process," she asks. Jamie correctly notes that it is the pedals making the wheels turn. "Finally," Mrs. Brown says, "there is an *output*, or the result that happens from the process." Megan quickly volunteers that the bicycle is moving. Mrs. Brown adds that technological systems also have a *feedback* loop, which in this case is the rider observing that the bicycle is moving in the direction and speed that is desired. "Let's call this pedaling system the *power system* of the bicycle," Mrs. Brown suggests.

"Is there anything else happening when you ride the bicycle," Mrs. Brown asks? "Well, sure," Alice reminds her, "you have to steer." "Would you consider *steering* a system also?" she asks. Alice thinks for a moment, then answers in the affirmative. "What else?" she asks. "Sometimes you have to brake," Jamie notes. "Would you consider the brakes to be a system also?" she asks. After contemplating, Jamie decides that the input is the brake lever, the process is the brake pads on the wheels, and the output is slowing down or stopping.

"It would appear, then, that a technological system might be made up of several subsystems," Mrs. Brown concludes. "In the case of the bicycle, we have a power system, a steering system, and a braking system." Mrs. Brown suggests they turn the bicycle over and look at the systems more closely, since the bicycle is already in the room. Megan and Bob turn the bike upside-down.

"Thinking about our science unit from last week on simple machines, do you observe any simple machines in the bicycle?" Mrs. Brown asks. "Sure, you have two wheels and axles," Megan observes. "Is that all?" Mrs. Brown challenges. "Oh! I see another! The pedal sprocket is like a wheel, too!" Bob exclaims.

Tomorrow, Mrs. Brown will help the children discover a relationship between speed and power as they experiment with pedaling and shifting the upside-down bicycle. Although the students aren't ready yet for the mathematical calculation, Mrs. Brown plans to have the students develop simple charts to depict the relationship. Gears, sprockets, and chains will also tie the technology and science units together. Some of the students had already experimented with gears and chains in some of the 'constructive' building sets in the classroom during their discovery period. Considering the social studies/technology unit that they had already completed on scarce resources and bicycles in the world, Mrs. Brown concludes that the curriculum integration is progressing better than she had hoped.

**Benchmark Vignette for Nature and History of Technology**
**Grades 6-8**

## EXPERIENCING THE HISTORY OF TECHNOLOGY IN STUDENT TERMS

The students in Mr. Washington's eighth grade social studies class are experiencing what it was like to be a student during different periods of our country's history. This week, the students are rotating through a series of realistic learning centers to emphasize the concepts they have been learning in the unit on *The History of Technology.* Some of the centers were developed with the cooperation of Ms. Denney's technological studies class. The creation of these centers also provided a worthwhile research and development project for the students.

The students are interested in the realistic centers, and their assignment: to write, edit, correct, and 'mail' a paragraph at each center with the technology typical of the period. Mrs. Brown's sixth grade class down the hall is also participating in this activity by acting as 'recipients' of the mail today.

A corner of the room has been set up to resemble a one-room school house of the early 1800s where Colleen and David are writing their 'ciphers' on their individual slates with chalk by candle light. In another center, Brian and José reenact the days of the western settlements at the turn of the century by dipping their quills into ink wells to write their assignments. Across the room, Maria and Tsu Lin use ball point pens from the mid-twentieth century, while at the table next to them, Tom and Michelle utilize technology typical of the 60s and 70s with manual and electric typewriters obtained by Mrs. Washington through the state surplus pool. Whitney and Dylan became excited when they were able to fax their message to Mrs. Brown's class.

The paragraph that the students are writing is based on the research that they conducted on the mode of communication used in each center's time period, contrasted with the preceding time period. Colleen and David, for example, are contrasting the speed of the Pony Express with the slow and unreliable method of relying on travelers to carry mail. Similarly, Brian and José are contrasting the efficiency of the stage coach and 'iron horse' with the Pony Express system. Maria and Tsu Lin are writing about the development of the telegraph and telephone, while Tom and Michelle are building on that by describing early international communication via underwater cables. Finally, Whitney and Dylan are writing about electronic communication with the Internet.

Mr. Washington brought closure to this experience by having the students share what they had learned as they went through the centers. José remarked about how much faster sending mail was today ... even instantaneous with email. Tsu Lin commented that it is much easier to correct mistakes with today's technology than it used to be. David thought that people could write and send 'lots more' mail today without worrying about running out of supplies like chalk, or breaking their slates on the way home from school. Colleen observed that the word processor on the computer could do lots of neat stuff that the typewriter couldn't do. But Whitney said it best: "Being a student today is sure a lot more fun than it used to be!"

**Benchmark Vignette for Linkages**
**Grades 9-12**

## STUDENTS PLAN NEW AIRPORT SITE

Students in Mr. Touchette's high school technological studies class were discussing the issues surrounding the development of the new regional airport near their school. The students thought it would be a neat idea to design a layout of the airport as a class project and see how close their plan would be to that of the civil engineer's plan. Mr. Touchette assigned students to begin reviewing aerial photos of a practical site, outline the area on a land plot book, and sketch a geographical map of their proposed site.

The students soon discovered how much of an impact the airport was to have on the region. Because of the amount of acreage needed, a state highway would need to be rerouted, part of a creek bottom would need to be rechanneled, and many farms would need to be bought to begin this project. The students were concerned about the environment and the relocation of current residents. After much discussion, the class thought it would be a good science activity for students to study about preserving wetlands and minimizing the pollution that this airport could bring to the area. Ms. Dee's biology class joined in on the project.

The biology students began looking at the species of animals in the wetlands that would be affected. Likewise, the science students designed a survey to send to the residents near the location site, to gain knowledge about their feelings about the airport project. Another activity the students participated in was a field trip to a regional airport fifty miles from their site. The students recorded acoustical findings at variable distances from the airport. Ms. Dee, then assigned the class to divide into three groups to develop reports on the wetlands, residents, and noise pollution.

After several weeks of the two classes working independently, the technology students and biology students met jointly to share the work that each had completed The technology students had completed a Computer Aided Drawing (CAD) layout of the airport. The plan included details of the airport terminal, runways, control tower, and support facilities. One group of students completed a new land plot map to show the geographical changes the airport would cause to the rural area. Another group of students built a scale model of the airport. Yet another group of students redesigned the layout of the state highway that would need to be rerouted. The biology students presented a report on the wetlands, supported by photos, graphs, and charts of the animals endangered by the airport development project. Students who had surveyed residents presented another report on the human impact the airport would have on their lifestyles. The final report presented a probability study of noise pollution the airport would cause in the existing area.

Because of the importance of the information the two classes had developed, the teachers encouraged the students to combine their materials together into a comprehensive impact study that they could present to the Regional Economic Development Council. This project was a first-hand experience for the students to observe how technological activities can affect society and how society can affect the development of technological activities.

Additionally, the activity represented a practical problem of meeting human needs in relation to environmental and economic consequences. The students were able to view first-hand how technology has numerous linkages to other fields of study and societal concerns.

Reference

Technology for All Americans Project. (1997). *Standards for Technology Education (First Draft)*. International Technology Education Association: unpublished.

Brusic, S., & Sanders, M. (1997). *A Vision for An Articulated K-12 Technology Education Curriculum*. Presentation: Roanoke, Va.

# Appendix G

## The Presence of Arts Education in Virginia Schools
## Presentation to the
## Virginia Commission on the Future of Public Education
## March 13, 1997
## Lyn E. Tarabick, Executive Director
## Virginia Music Educators Association, Inc.

Good afternoon, Mr. Chairman, ladies and gentlemen of the Commission. My name is Lyn Tarabick. I'm the Executive Director of the Virginia Music Educators Association, here today representing the Virginia Fine Arts Leadership Coalition for Education.

Arts educators across the Commonwealth appreciate the opportunity to provide the Commission on the Future of Public Education a brief summary about the arts in education. This will include information about the impact of the arts on learning in other curriculum areas, a key ingredient in student achievement and personal development. We also will cite for you where we believe the arts should presently be in the reforms that are occurring in Virginia and where we hope the arts will be in the future.

Let us first consider what the latest research studies tell us about the arts. Does learning to play a musical instrument help students learn how to read? Does playing a keyboard instrument improve the student's ability to perform the type of reasoning and skills required for excellence in science and math? Do students who study the arts score higher on SAT scores than their non-arts peers? Does the study of the arts help students learn self-discipline and develop other attributes that are essential to a competent workforce? The answer to each of these questions is "yes," and the answers are based not on testimonials or speculations, but on reliable research that has been conducted in recent years. Let us consider, then, that studying the arts cultivates the whole child, offers a more engaging way to learn, and is a powerful force in student achievement and in the student's motivation to learn.

During the past two weeks arts educators have had an opportunity to study the Standards of Accreditation and to determine the place of the arts in these regulations. First and foremost, we desire the arts to be a part of the core areas of the curriculum - not on the fringes - not extracurricular or interscholastic. What are the changes that we would desire in the SOAs that have been presented recently?

(1) Every child (K-5) in every elementary school shall have instruction in the arts. The school "providing" the arts (music and art) is not sufficient. After many years of diligence to ensure the revision. the desired standard was implemented only four years ago. We must ensure this continues.

(2) In grades 6-8, Virginia's middle schools must provide every student at least one year (or two semesters) of arts instruction. It is difficult to understand that with the proven power of the arts to transform education and improve student achievement that students in our middle schools could go through three years of their education without some requirement in the arts.

(3) A fine arts credit for graduation must be required of all students and separated from practical arts. We are certainly not advocating the omission of the practical arts from the elective

choices of students, but the growing number of states implementing the fine arts requirement provides evidence of a national trend in this direction. This provides for the arts to be a component of what it means to be an "educated person." Articles in the folder that we have supplied to you such as "Why High School Students Should Study the Arts" will support the reasoning behind this issue.

(4) High school students who choose the academic diploma program will have a very difficult time scheduling any electives in the 9th and 10th grades unless there is a 7- or 8-period school day or a modified scheduling plan. Students, for example, who desire to continue an instrumental or vocal music class perhaps will be unable to do so, thereby losing their opportunity for sequential study for two years. Continuous study by students in visual arts will be affected likewise. It is difficult to imagine a school in which the students who choose the highest level of academic opportunities will be unable to continue their arts education.

Arts educators are certainly not opposing the vision for high academic achievement by all students, preK-23; however, we do believe that the arts should be incorporated in the SOAs to the degree that all students will be given opportunities to study and experience the arts in an equitable manner. To quote the late Charles Fowler in his article, "Strong Arts, Strong Schools," published in *Educational Leadership* in 1994, "The arts humanize the curriculum while affirming the interconnections of all forms of knowledge. They are a powerful means to improve general education."

Arts educators, supported by parents, school administrators, and legislators, believe that the state share of funding salaries of elementary art, music, and physical education teachers ought to be included in the state's budget. The salaries for these three groups of teachers are presently (and always have been) borne totally by the local school divisions. Should we continue to add positions such as the proposed "technology resource assistants" in the elementary schools with recommended salary funding and fail to support instructional positions that have been in our schools for many years? This does not say that we believe that technology positions are unnecessary or of no value to all teachers and students. Indeed, we do recognize the great importance of this initiative. However, we also believe that art, music, and physical education should be taught by teachers licensed in those respective areas and that they state should share in funding their salaries as well.

Finally, what can we expect for the future of the arts in education in Virginia? The goal of the Virginia Fine Arts Leadership Coalition for Education (and its eight supporting member organizations) is that "every child in every school of the Commonwealth of Virginia will receive a well-rounded, sequential, and comprehensive program of the arts taught by licensed arts teachers."

We believe that "the arts are essential to the core of a broad-based curriculum that is derived from rigorous standards." We also believe that Standards of Learning in the arts should be developed and implemented as a part of the educational reform efforts in Virginia. The arts also need to be a part of the strategic plan that is being developed and implemented by the Board of Education and the Department of Education. Professional development of arts educators along with other educators, the use of the best current resources and proven methodologies and philosophies for teaching and learning, and the integration of the arts across the curriculum also will serve to strengthen the educational programs of high quality that are expected in all schools for all students.

Having arts education as an integral part of Virginia's education plan as we move toward the 21st century will enable to arts to become basic experiences in education and "will benefit

students of every economic, social, racial, and ethnic background, allowing expression of self, expansion of cultural boundaries, and an understanding of human development." (Thomas Shannon, National School Boards Association)

We urge this Commission to consider the information and suggestions that have been presented and to review, as soon as time permits, the materials that are assembled in your folder. We believe that your mission can be enhanced by including the arts in your proposal for the future of public education in Virginia.

## VIRGINIA SAT SCORES 1997
## *FOR STUDENTS HAVING COURSEWORK/EXPERIENCE IN THE ARTS*

| Title of Course | Verbal Mean Scores | Math Mean Scores | Total |
|---|---|---|---|
| Acting/Play Prod. | 548 | 518 | 1066 |
| Art Hist/Appreciation | 518 | 505 | 1023 |
| Dance | 523 | 499 | 1022 |
| Drama Appreciation | 541 | 512 | 1053 |
| Music Appreciation | 537 | 520 | 1057 |
| Music Performance | 526 | 511 | 1037 |
| Photography/Film | 530 | 513 | 1043 |
| Studio Art/Design | 535 | 522 | 1057 |
| Honors | 561 | 543 | 1104 |
| No Arts Coursework | 481 | 480 | 961 |
| National Scores | | | |
| Music Study | 539 (+2)* | 534 (+14)* | 1073 |
| Music Performance | 529 (+3)* | 529 (+18)* | 1058 |
| No Arts Coursework | 477 | 492 | 969 |
| National Mean | 505 | 511 | 1016 |
| Mean for Virginia | 507 | 497 | 1004 |
| Comparisons | | | |
| Virginia students Arts Mean Scores | 536 | 516 | 1051 |
| No Arts Courses | 55 higher | 36 higher | 91 higher |
| Virginia Arts Students Points Higher than Virginia Mean Score | 29 higher | 19 higher | 48 higher |

* Higher than Virginia Music Students

# Appendix H

# Commonwealth of Virginia
# The Future of Education

**"Network Technology in K-12"**

# Vision

- Create a network infrastructure that will support Virginia K-12 school initiatives for the 21st century, provide access for voice, data, and video telecommunications, and enhance the educational equality and experience for all Virginians regardless of location within the Commonwealth.

# Objectives

- Provide equal access anywhere for K-12 students.
- Provide high speed local connections to Net.Work.Virginia
- Provide for an Intranet and Internet capability
- Provide video based tools for the classroom
- Provide servers and services for Instructional purposes
- Provide support services for K-12 teachers

# Instructional Support

## Classroom Extensions

- Distance Learning
  - Video extension of a classroom
  - Faculty play the same role
  - Technology based additions

- Internet Environment
  - Home pages & Internet tools
    - Information searches
    - Home pages for courses
  - E-mail between faculty and students
  - Office & presentation tools
  - Video tools

# Implementation

- DOE establishes guidelines for connectivity
  - Architectural model and guidelines
  - Define local versus shared services (e.g. video bridges)
    - VCCS model available as starting point
    - Southside Virginia Consortium model
    - Winchester & Franklin model
  - Leverage volume purchase agreements

- SCHEV professional development program for teachers
  - Expand the Teachers Institutes program
  - Initial program for high school teachers
  - 28,000 of 78,000 teachers in Commonwealth
  - Potential for travel savings by using technology

# Implementation

- School districts implement the connectivity plan
  - Net.Work.Virginia connection
  - Data connection for all schools
  - Video connection for high schools
- Schools districts install Commonwealth classrooms(video)
- Teachers attend professional development programs
- School districts report yearly accomplishments

# Architecture Model

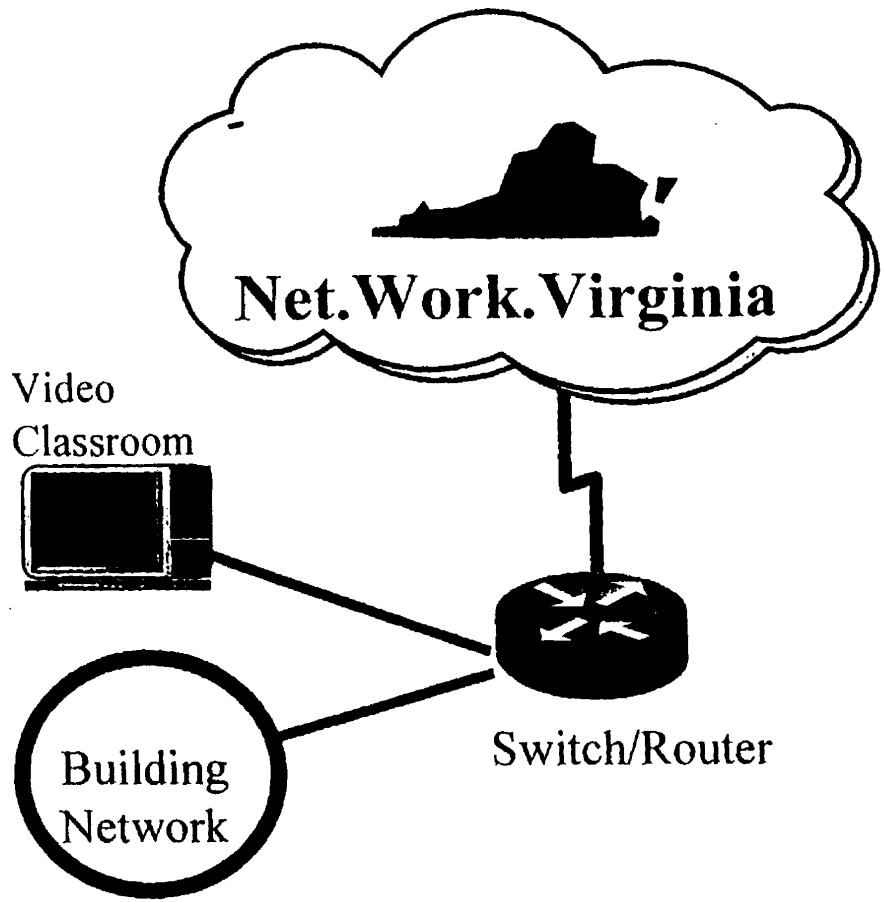
- Four components to the model
  - Desktops
  - Network
  - Servers
  - Support services
- Guidelines based upon industry standards when available
  - VCCS model available on the Web
- Insures connectivity of local infrastructure from a Commonwealth perspective

# Telecommunications Network

Each school building connects to the Net.Work.Virginia cloud directly (District networks may connect if they are ATM based).

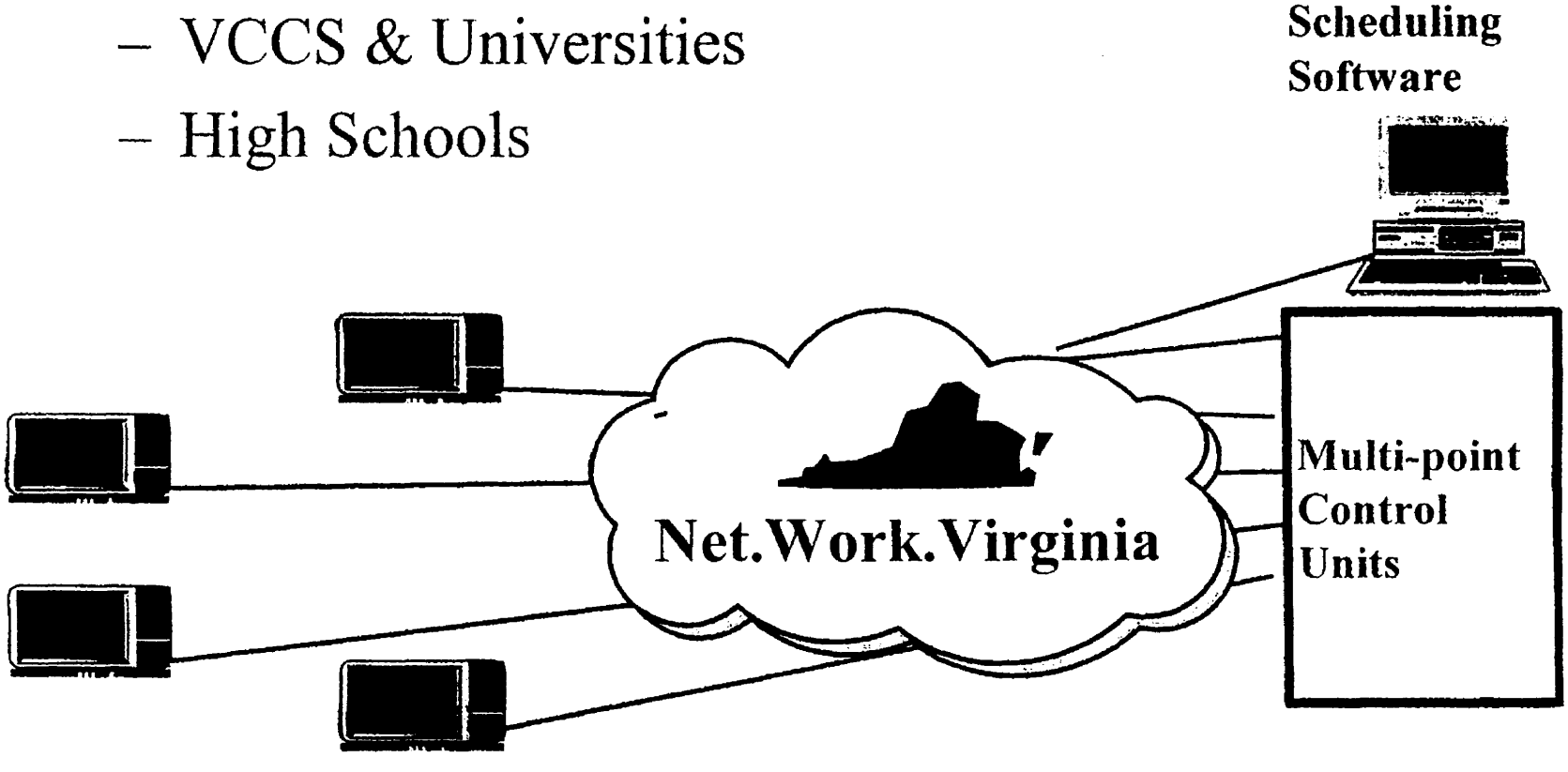
All high schools have video classroom facilities for use by the district.

Costs are equal fixed monthly charges for everyone. ***No*** time, distance, or usage charges



# Distance Learning

- **Commonwealth Classroom**
  - VCCS & Universities
  - High Schools



# Classroom Desktops

- Classroom desktop
  - Assumed to be included in DOE/Schools technology plans
- Micro computer H323 video units
  - Desktop computer and software - $10,000
  - Classroom projector - $5,000 each
  - Limited multi-point connectivity
  - Emerging technology
- Classroom H320 video unit
  - Single monitor unit - $38,000
  - Extra audio or monitor - $2,000
  - Maintenance annual - $4,500
  - Current technology

# Network

- School building network
  - Assume to be in DOE/School technology plan
  - Cable - copper category 5 / Fiber between wire closets
  - Electronics - switches, routers, hubs
- External connection - Net.Work.Virginia
  - Single school or data network only connection
    - Cisco 3800 Router / multiplexor - $7,000
    - T1 line install - $1,000
    - Cisco 3800 maintenance - $1,000 annually
    - T1 line annual - $12,000 annually
  - Multiple schools or district connection
    - Cisco 1010 ATM switch - $27,000
    - Cisco 4700 router - $19,000
    - T3 (DS3) circuit install - $2,000
    - Cisco electronics maintenance - $4,500 annually
    - T3 (DS3) circuit - $60,000 annually

# Servers - Video Bridges

- General servers
  - Assume to be in DOE/Schools technology plan

- Video bridges
  - Onetime
    - $10,000 per port for hardware/software
    - Scheduling software - $125,000
    - ATM switch - $43,000
    - OC3 circuit install - $2,000
  - Annual
    - Video bridge maintenance - $200 per port annually
    - T3 circuit - $60,000 annually

# Support Services

- Professional development program
  - $600 per person * 78,000 teachers = $46.8 million/ ? years
- First level general support
  - Teachers coach and provide peer help
- Second level technical support
  - Install and repair - one FTE per district or region
- Third level product support
  - Call desk specialists - one FTE per 100 ports @ $75,000
  - VT network staff - 2 FTE @ $75,000
  - Five spare units - parts and testing
    - video units - $28,000 * 5 = $140,000
    - Switch/router - $7,000 * 5 = $35,000

# Organization

- Video bridge management
  - Options - School districts, DOE, VCCS, VT, DIT
- Customer service - product specialists
  - Options - DOE, VCCS
- Technical support
  - Options - School districts, VCCS

# Cost Estimate Tables

| | Count | Video | Data | Servers | Support | Total |
|---|---|---|---|---|---|---|
| Grade Schools | 1143 | | 1143 | | | |
| middle Schools | 275 | | 275 | | | |
| High Schools | 276 | 276 | 276 | 7 | | |
| Combined Schools | 76 | | 76 | | | |
| Work Education | 38 | | 38 | | | |
| Total | 1808 | 276 | 1808 | 7 | | |
| | | | | | | |
| Product Specialists | 3 | | | | 225,000 | |
| Technical Support | 132 | | | | 5,940,000 | |
| VT network staff | 2 | | | | 150,000 | |
| | | | | | | |
| **One Time** | Each | 40,000 | 8,000 | 445,000 | | |
| | Total | 11,040,000 | 14,464,000 | 3,115,000 | 175,000 | **28,794,000** |
| | | | | | | |
| **Annual** | Each | 4,500 | 13,000 | 68,000 | | |
| | Total | 1,242,000 | 23,504,000 | 476,000 | 6,315,000 | **31,537,000** |

# Appendix I

## Prioritized Recommendations

### 1. Aggressive and Comprehensive Implementation of Standards of Learning and Systemic Change

Recommendations 1, 3, 12, 13, 27, 28, 34, 35, 42, 45

### 2. Remediation

Recommendations 20, 21, 22, 23, 24, 25, 33, 40, 44

### 3. Early Childhood

Recommendations 16, 17, 18, 19

### 4. Choices — Career

Recommendations 2, 4, 5, 6, 7, 8, 29, 30, 31, 36, 37, 38

### 5. Leadership Development

Recommendations 9, 10, 11, 14, 15

### 6. Incentives

Recommendations 33, 39, 41, 43

## 1. Aggressive and Comprehensive Implementation of Standards of Learning and Systemic Change

1. The Standards of Learning in all subject areas shall be subject to regular review and revision to (1) maintain rigor in all subject areas and (2) reflect a balance between content knowledge and the application of knowledge in preparation for eventual employment and lifelong learning.

3. Assessments of student performance shall evaluate critical thinking and the application of knowledge and skills, and the Department of Education, with the assistance of independent nationally-recognized testing experts, shall be responsible for conducting an on-going analysis and validation process for these assessments. The first report of this analysis shall be made to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.

12. The Department of Education shall provide and teachers shall participate in intensive training to prepare those teachers who teach the revised English, mathematics, science, and social studies Standards of Learning in instructional methods that recognize different learning styles and teach children how to apply knowledge.

This training shall include a one-time intensive three-week training program of professional development over a four-year period that focuses not only on the four core SOL, but also on (1) teaching strategies and methodologies that emphasize application of knowledge, linking assessment with instruction, (2) the use of educational technology for instruction, (3) working with parents, and (4) technological studies.

13. A program of lead teachers in mathematics, science, technological studies, English, and social studies shall be established and maintained to provide support for elementary and secondary school teachers. The program shall be phased in over a ten-year period, beginning in 1999-2003 with mathematics and science lead teachers in elementary and middle schools and phasing in English, social studies, and technological studies lead teachers in 2004-2008 in elementary, middle, and high schools.

26. A research unit for the collection and dissemination of information regarding "best practices" shall be established within the Department of Education to serve as a resource for school divisions. Priority shall be placed on serving school divisions with less than a 70 percent pass rate on the Literacy Passport Tests and the Standards of Learning tests.

27. The Department of Education shall include in the Outcome Accountability Project report, made annually to the public on the progress of Virginia's schools in improving or failing to improve student learning performance, an analysis of the strengths and weaknesses of public education programs in the various school divisions in Virginia and shall make recommendations for further enhancing student learning uniformly across the Commonwealth.

28. The Department of Education shall conduct technical assistance visits to each school division on an established cycle. Schools accredited with a warning must be given priority for technical assistance that begins with analysis of relevant school data and continues through the development and implementation of an improvement plan.

34. The Commonwealth shall require pre-service programs and fund the establishment of in-service programs for teachers, principals and administrators designed to strengthen educators' ability to communicate and work with families and help families become involved in their children's learning at home and school.

35. The Department of Education shall gather and disseminate information and provide resources for implementing family/community programs, including information on potential private funding, support sources, and existing exemplary programs.

42. Any school which experiences three or more years of provisional accreditation may be subject to being reconstituted by a directive of the division superintendent. The principal, teachers or entire staff may be reassigned to other positions in the sytem.

45. The Virginia Code Commission shall undertake a recodification of Title 22.1 to ensure clarity, uniformity, and consistency in Virginia's public education statutes.

## 2. Remediation

20. School boards shall provide, and students who fail to achieve a passing score on the Standards of Learning exam in grades 3, 5, and 8 shall be required to attend remediation programs held outside of normal school hours.

21. School boards shall provide summer school remediation for all elementary and middle school grades and for all high school academic courses.

22. The General Assembly should fund an Innovative Grant program recommended by the Joint Subcommittee Studying Remedial Summer School.

23. The Board of Education shall set minimum standards for remediation courses.

24. School boards shall biennially review the model student conduct code to incoporate a continuum of discipline options and alternatives to preserve a safe, nondisruptive environment for effective teaching and learning.

25. The Board of Education shall develop guidelines in the recommended number of alternative settings per 1,000 middle and high school students and the average incremental cost thereof and shall report the guidelines and the fiscal resources necessary to implement them to the House Committees on Education and Appropriation and the Senate Committees on Education and Health and Finance by December 1998.

33. The General Assembly shall provide 2 competitive grants per superintendents' region to schools and school divisions to plan, develop, promote, and expand meaningful family/community involvement programs designed to facilitate parents' creation of supportive learning environments at home and involvement in their children's learning at school and in school activities.

40. Effective for the 2004-2005 school year, promotion of any student failing the 5th or 8th grade English or mathematics SOL examination shall be contingent upon the school's provision of and the student's participation in a structured remedial program. A second promotion after failing to pass one or both exams should be granted only in specific situations, such as for certain ESL students and students with disabilities, and the school shall advise the public and the Board of Education of the number of such exceptions granted.

44. School divisions with one or more schools demonstrating a passing rate of less than 70 percent on all three Literacy Passport Tests by students taking these tests for the first time shall develop a comprehensive corrective action plan with and for each school during 1998-99 for implementation no later than 1999-2000, including specific goals for improvement, and shall receive technical assistance from the Department of Education in implementing the plan(s). The affected schools shall be rewarded for achievement of their goals.

## 3. Early Childhood

16. Each school division should implement a full-day kindergarten program for all children.

17. The General Assembly shall expand the four-year old at-risk preschool programs to cover to all eligible students in all schools. Additional funds are required to serve 100 percent of eligible 4-year-old students, including those currently served in Virginia public schools through local or

Title I funds.

18. The General Assembly shall appropriate sufficient funds to expand the K-3 class size initiative to bring schools with 50 to 69 percent Free Lunch participation from the current 18 students per teacher to 15 students per teacher in the 1998-2000 biennium, effective the first year to reflect the primary goal of K-3 programs of striving to ensure that 95 percent of all student groups are reading at grade level by the end of grade 3.

19. An incentive grant program to assist low-performing schools shall provide funds for implementing successful reading programs such as Reading Recovery and Success for All.

## 4. Choices — Career

2. The Board of Education shall establish Standards of Learning for an articulated technological studies program in grades K-12.

4. New Standards of Learning for vocational education shall require the full integration of English, mathematics, science and social studies SOL and incorporate a process for assessments, reporting, and consequences. All occupational vocational programs shall be aligned with industry and professional standard certification by the year 2002.

5. The requirements for a standard high school diploma shall include a concentration of courses selected from a variety of options. This concentration shall be planned to ensure the completion of a "focused career preparation" sequence in career, technical, or arts education developed by the respective school divisions consistent with Board of Education guidelines and be approved by the local school board and the Board of Education.

6. The requirements for a high school diploma shall include one credit in fine or performing arts.

7. The Department of Education shall study the feasibility of various methods and tools designed to focus students' attention on future education and career plans, and shall report to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.

8. The General Assembly should consider legislation which permits, as a local option, the formation of a limited number of carefully monitored charter schools within the state's public school system. These schools must admit eligible student applicants based on a lottery system to ensure fairness in attendance policies, and they must comply with all federal and state anti-discrimination laws, regulations, and court orders. They will not be exempt from the Standards of Quality, Standards of Accreditation, or Standards of Learning. Teachers in charter schools must be licensed to teach.

29. The Department of Education in collaboration with the Center for Innovative Technology and other high technology companies in Virginia shall assess the technology needs of local school divisions and establish guidelines for connectivity, including school local area networks; architectural models, definitions for local versus shared services such as video bridges), and leveraging volume purchase agreements with the ultimate result that the Commonwealth is connected through a network infrastructure to support K-12 school initiatives for the 21st century, provide access for voice, data, and video telecommunications, and enhance the educational equality and experience for all Virginians, regardless of location in the Commonwealth. The Department

shall report the results of the needs assessment and the guidelines to the House Committees on Education and Appropriation and the Senate Committees on Education and Health and Finance by December 1998.

30. Proficiency in educational technology shall be a condition of licensure for all teachers in Virginia's public schools, and the General Assembly shall provide grants for implementing the recommended technology infrastructure, hardware and software for teacher education programs in public institutions of higher education in the Commonwealth.

31. Staffing levels outlined in the Standards of Quality shall require that the employment of at least one full-time educational technology expert per school division.

36. To enhance on-going partnership efforts between schools and business, the Board of Education shall establish a new program of 16 pilot grants to provide incentives for partnerships between school divisions and local business and industry that focus on teaching higher level skills and the application of new knowledge.

37. Local school boards shall be required to establish local business advisory councils.

38. A state business advisory council shall be established to advise the Governor and the Board of Education regarding workforce and education issues.

## 5. Leadership Development

9. Effective after June 2001, graduates of Virginia institutions of higher education will be licensed as teachers only if the endorsement areas offered at such institution have been assessed by a national accrediting agency or by an enhanced state approval process with final accreditation by the Board of Education.

10. To encourage talented students, particularly minorities and men, into teaching in shortage areas, the Teaching Scholarship Loan program shall be expanded by providing 200 scholarships per year to eligible candidates.

11. Clinical faculty and mentor teacher programs shall receive increased state support.

14. The Board of Education shall establish leadership standards for superintendents and administrators, and shall provide leadership training programs that superintendents and administrators are required to successfully complete as a condition of licensure.

15. The Department of Education in collaboration with professional organizations involved in teacher education shall undertake a study of the feasibility of a one-year internship as the first year of teaching following completion of a teacher education program, and shall report to the House Committees on Education and Appropriations and the Senate Committees on Education and Health and Finance by December 1998.

32. Each school division shall establish a voice mail communication system after regular school hours for parents, families, and teachers by the year 2000.

## 6. Incentives

39. The Commonwealth's accountability initiative shall include a system of state and local

incentives or rewards for students.

41. A system of state and local recognition, including both incentives and consequences, shall be established for teachers and administrators.

43. A system of state and local incentives or rewards shall be created for schools demonstrating excellence or showing significant improvement toward clearly stated goals, including academic performance and family involvement.

# Appendix J

# Executive Summary

# Year-Round Program

# 1996-97

# Schoolfield Elementary School

**Presented to Danville City Council**
**September 29, 1997**

# YEAR-ROUND RESULTS AT SCHOOLFIELD

- Although the intersessions have been optional, participation rates were high. Ninety-six percent (96%) of the students attended at least one intersession - only 22 students (4%) did not attend any of the intersessions. Fifty-one percent (51%) attended all the intersessions. The combined membership for the 4 intersessions reflects a total of 10,240 extra days of instruction.

- After the first 10-day intersession in October, 43% of those students who had been at the D/F level achieved and maintained progress at a C or better level in reading and math throughout the remainder of the school year. By the end of the year, 51% of those students at the D/F level in October were working at a C or better level in reading AND math. An additional 18% brought their reading OR math grade up to at least a C level. (18% of the remaining students moved out of the Schoolfield attendance area and data is not available on their progress.)

- Independent reading progress improved. During the previous school year, less than 4,000 Accelerated Readers tests were taken. Because of the year-round program, additional time and access to library books, along with teacher encouragement to read more, there were 10,953 tests taken and PASSED!

- Special education referrals dropped significantly. There was a decrease from 30 initial referrals during the 1995-96 school year to 11 during the 1996-97 school year - a 63% decrease.

- The schoolwide retention rate dropped from over 3% in 1995-96 to 2% during the 1996-97 school year. Only 1 kindergarten student was retained and he did NOT attend the first (October) intersession.

- Schoolfield's past ITBS scores have ranged from 7 to 13 percentile points <u>below</u> the Danville Public School averages (7 to 8 points below in reading, 7 to 8 points below in math, and 10 to 13 points below in language). This year, the STANFORD 9 test was given. Schoolfield's second grade test scores ranged from 4 to 10 percentile points ABOVE

the school system average (4 points above in reading and language and 10 points above in math). Schoolfield's third grade test scores only ranged from 3 to 5 percentile points below the school system average (4 points in reading, 5 points in math, and 3 points in language).

- Faculty and staff absences decreased by 15%.

- Although there were 40 additional days, classroom referrals decreased by 30% and bus referrals decreased by 10% from the total number of referrals during the previous year.

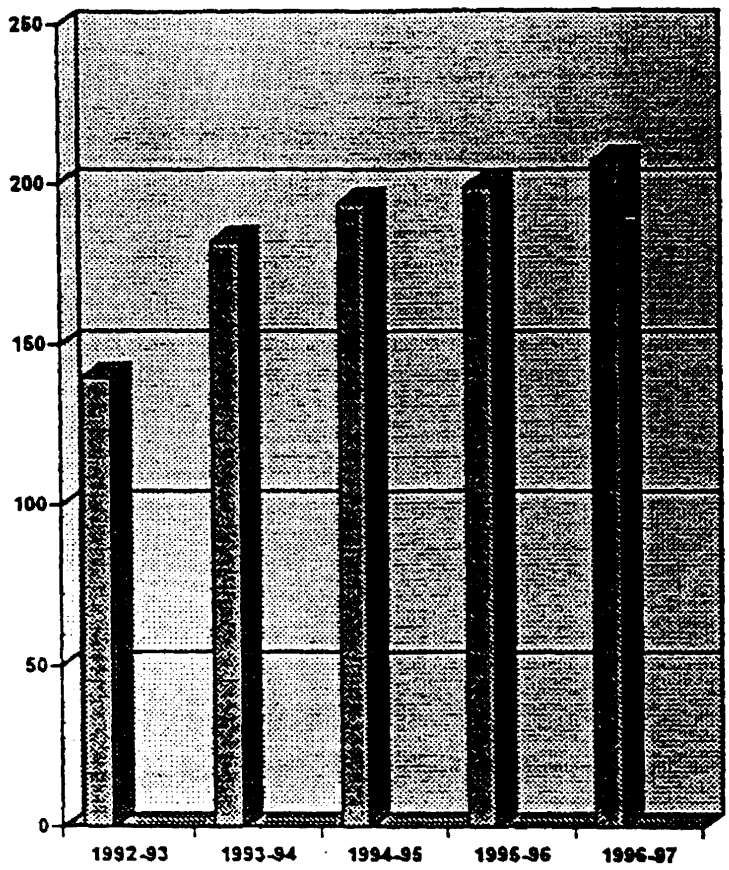
- On teacher-made tests, all grade levels were above the 70% SOL mastery level expected by the state. The highest level of mastery (85% to 96%) was at the kindergarten and first grade levels where the additional time during intersessions allowed most learning "gaps" to be addressed.

- Classroom discipline referrals decreased by 30% and bus referrals decreased by 10%. This comparison is based on 220 days during the 1996-97 school year versus the 180 day 1995-96 school year.

- Parent and student surveys reflect that 96% to 100% of the students enjoyed the intersession classes, talked with their parents about the extra things they were learning, and viewed the classes as a positive experience.

- Teachers reported minimal learning loss over the summer and more on-grade level teaching and learning occured based on fall and spring classroom assessment.

# STUDENT MOBILITY




1992-93 - 140 student moves in and out

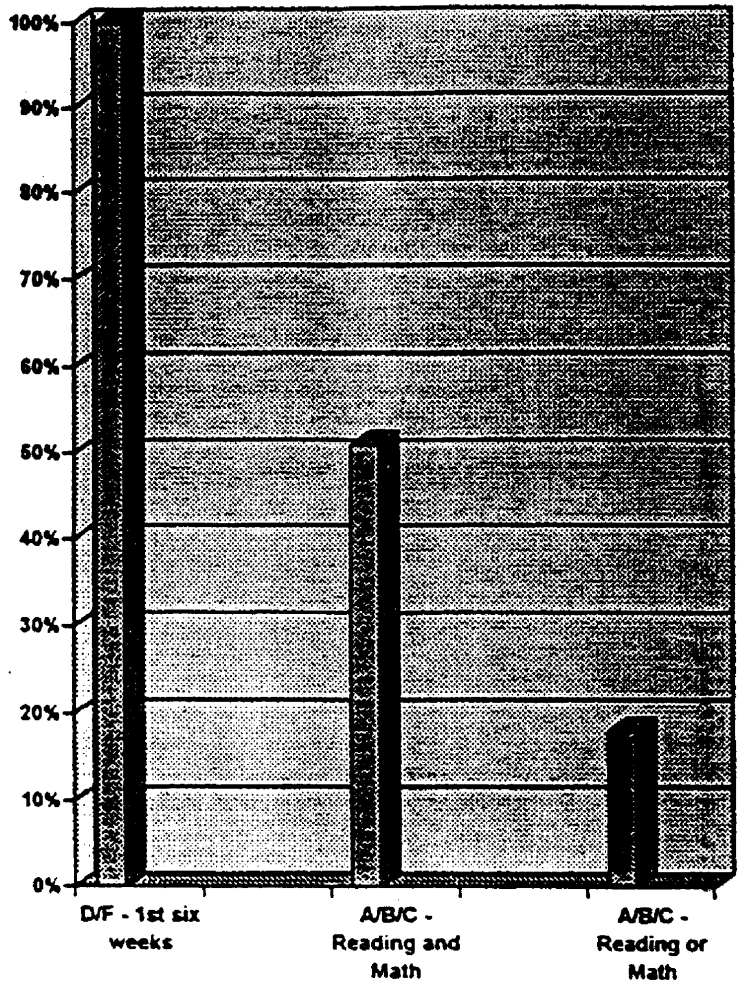
1993-94 - 182 student moves in and out

1994-95 - 194 student moves in and out

1995-96 - 199 student moves in and out

1996-97 - 207 student moves in and out

# IMPACT of FIRST INTERSESSION

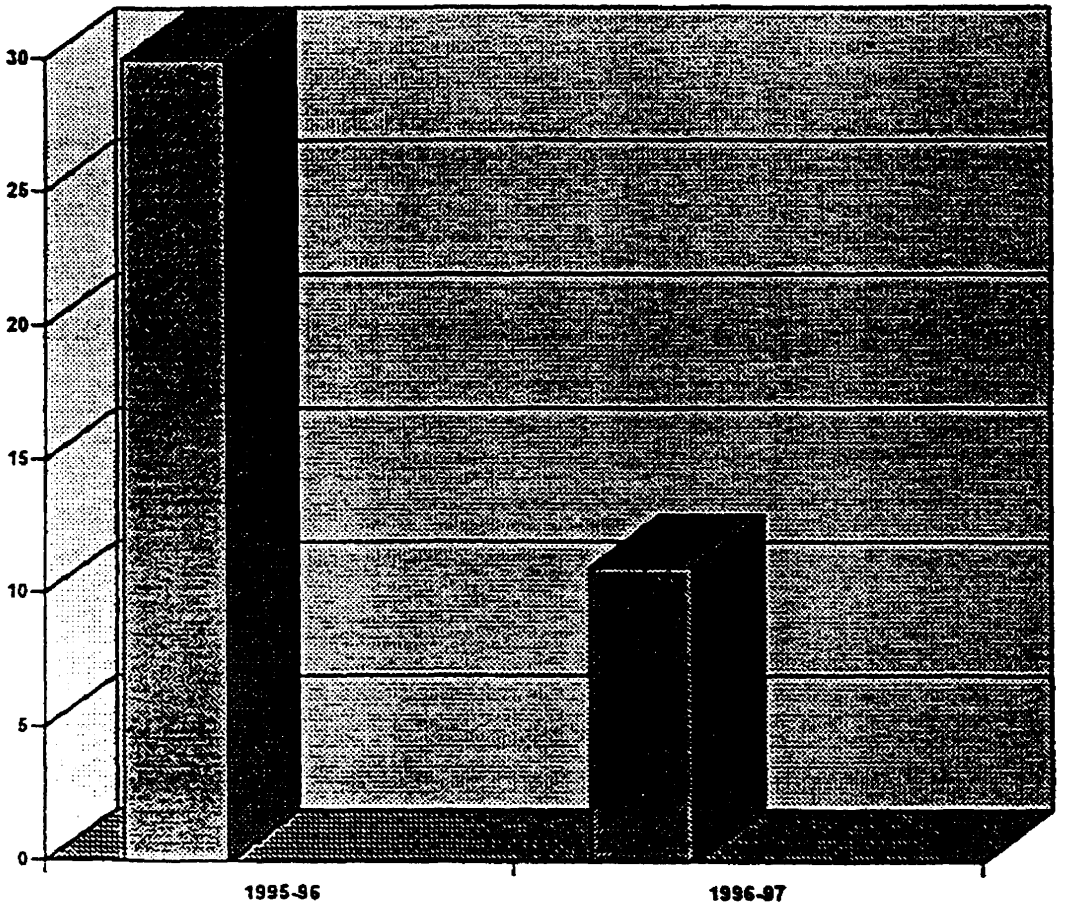



D/F level - 74 students

A/B/C level in reading and math - 51% (38 students)

A/B/C level in either reading OR math - 18% (13 students)

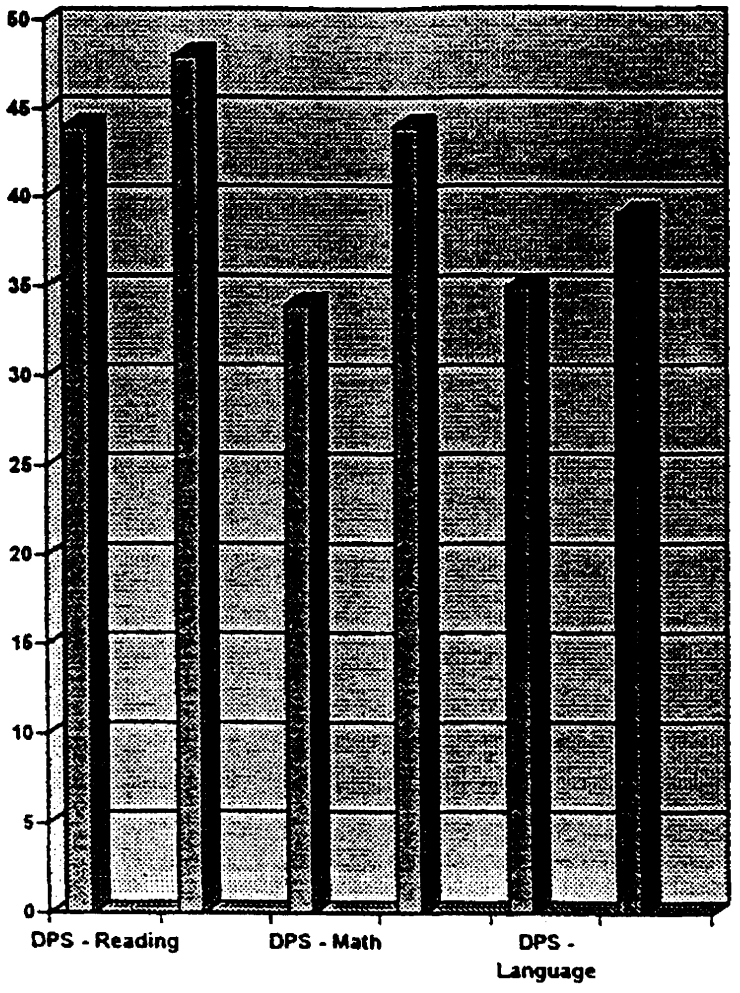
# SPECIAL EDUCATION REFERRALS




1995-96 30 initial special education referrals

1996-97 11 initial special education referrals

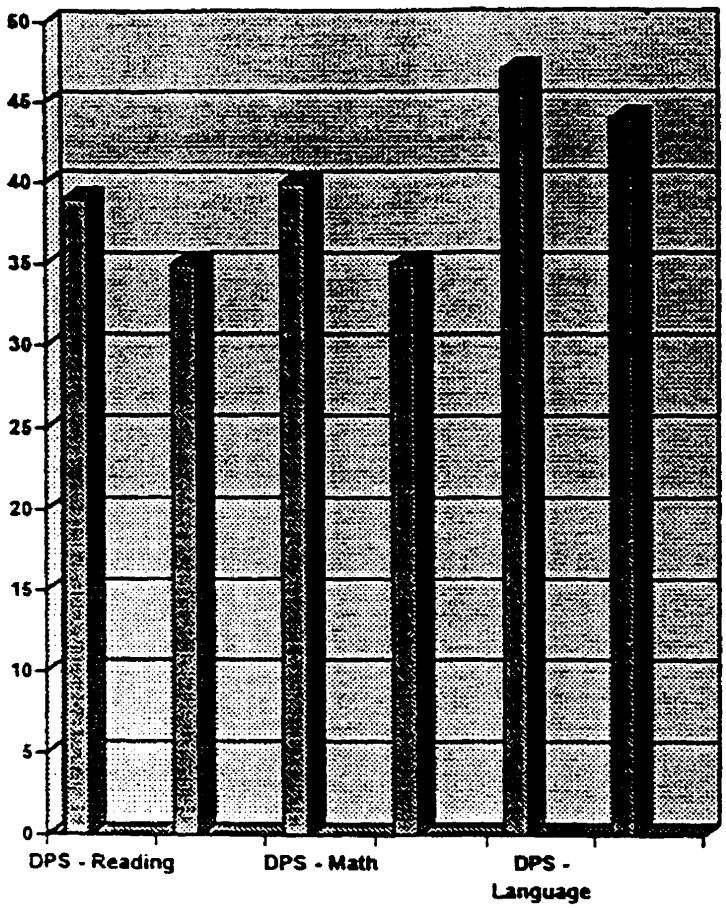
# STANFORD 9 - Second Grade




| | READING | MATH | LANGUAGE |
|---|---|---|---|
| DPS | 44 | 34 | 35 |
| Schoolfield | 48 | 44 | 39 |

(Schoolfield Ability Indicator - 26th percentile)

# STANFORD 9 - Third Grade



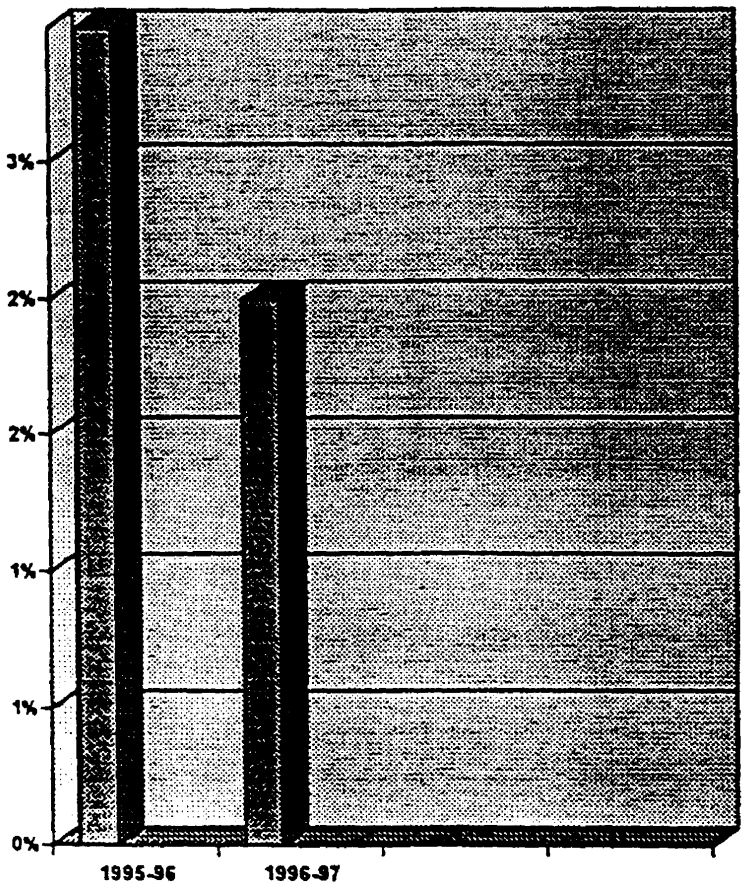

| | READING | MATH | LANGUAGE |
|---|---|---|---|
| DPS | 39 | 40 | 47 |
| Schoolfield | 35 | 35 | 44 |

Schoolfield Ability Indicator - 32nd percentile

| ACCELERATED READER | | | | | |
|---|---|---|---|---|---|
| Grade Level | Grade 1 | Grade 2 | Grade 3 | Grade 4 | TOTAL |
| # Tests Passed | 585 | 4,590 | 2,982 | 2,796 | 10,953 |

***In 1995-96, less than 4,000 tests were taken and passed

# RETENTIONS




1995-96 - 18 retentions - 3.3%

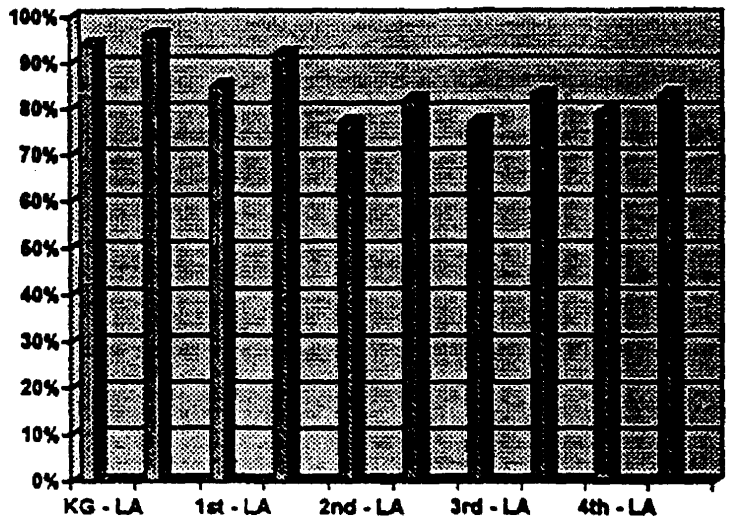
1996-97 - 14 retentions - 2.5%

3 retentions were recommendations from special education referrals

2 retentions were new students with recommendations for retentions

# SOL MASTERY

## % of Objectives at Mastery Level




PERCENTAGE OF SOLs at Mastery Level

Kindergarten:
- Language Arts - 94%
- Math - 96%

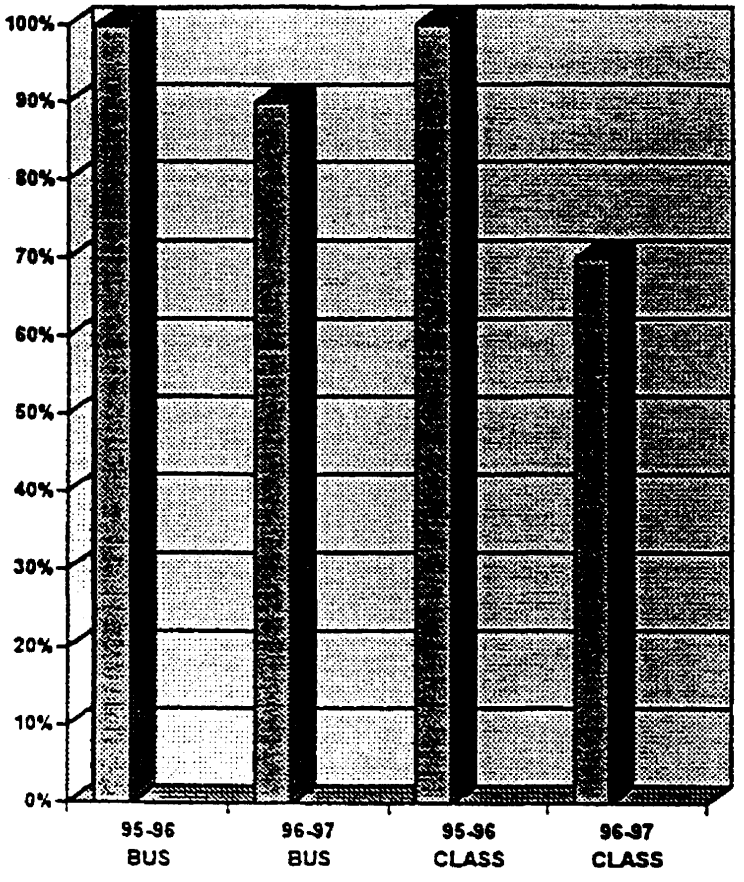
First Grade:
- Language Arts - 85%
- Math - 92%

Second Grade:
- Language Arts - 77%
- Math - 82%

Third Grade:
- Language Arts - 77%
- Math - 83%

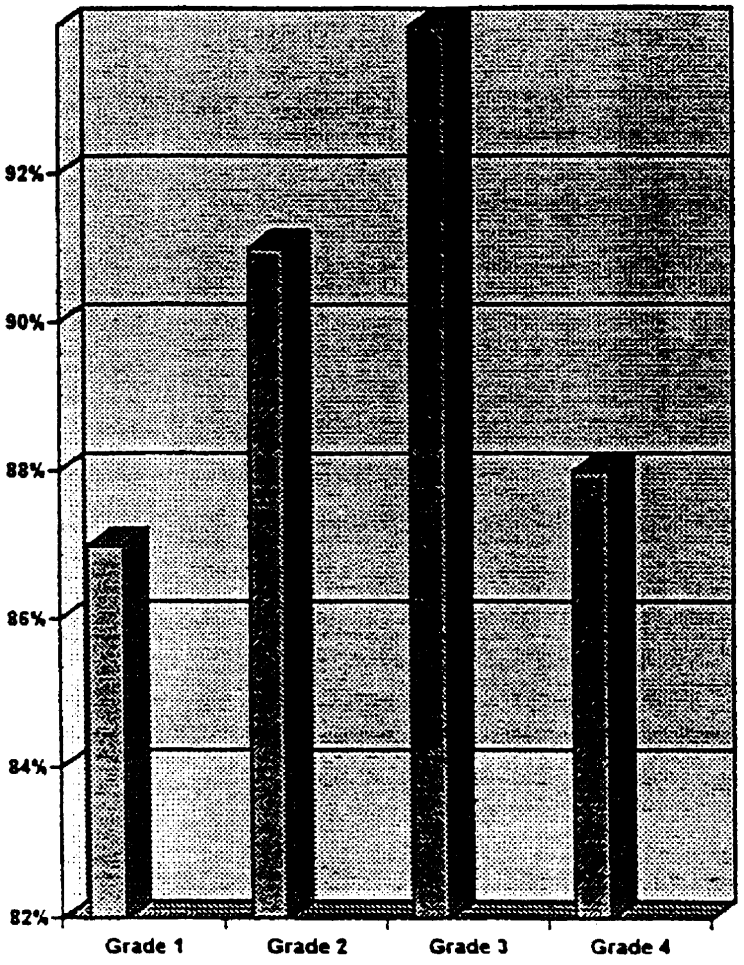
Fourth Grade:
- Language Arts - 79%
- Math - 83%

# DISCIPLINE REFERRALS




| | 1995-96 | 1996-97 | % DECREASE |
|---|---|---|---|
| Bus Referrals | 278 | 255 | 10% |
| Class Referrals | 346 | 241 | 30% |

# On-Grade Level Reading
# End-of-Year



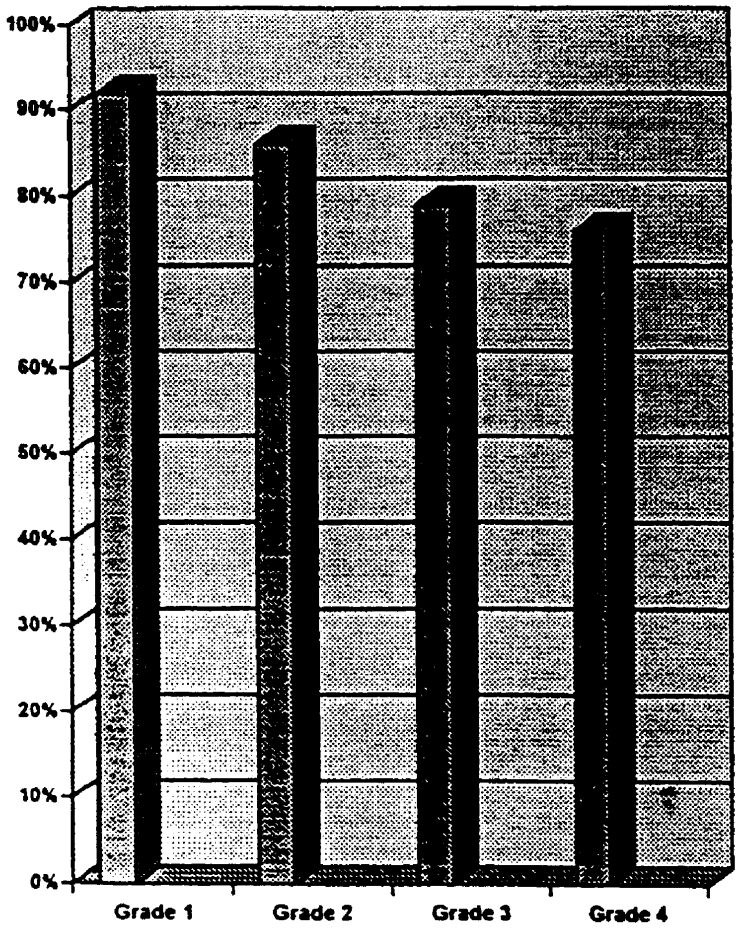

Grade 1 - 87% on grade level

Grade 2 - 91% on grade level

Grade 3 - 94% on grade level

Grade 4 - 88% on grade level

# On-Grade Level Math
## End-of-Year




Grade 1 - 92% on grade level

Grade 2 - 86% on grade level

Grade 3 - 79% on grade level

Grade 4 - 76% on grade level