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ABSTRACT

A team consisting of Maryland State Department of Education (MSDE) staff, local educators, and other representatives developed an action plan to assist in advancing the blending of academic, career, and technology education. The team prepared a vision statement, set strategic directions, analyzed barriers, and developed recommendations and actions for a 5-year period. The main tenets of the vision were as follows: (1) every student will participate in challenging and purposeful studies blending theory and application; and (2) every graduate will demonstrate mastery of the life skills required for a smooth transition into a globally competitive, technologically advanced, and service-oriented society. Five practices were mandated for Maryland schools to permit students at every level of schooling to receive blended instruction in a "single seamless system of education." The team also formulated a 10-point action plan for the MSDE to implement to help school systems and communities achieve the vision for blended instruction as a systemwide practice. (This report includes 17 references and appendixes containing a correlation of national and Maryland goals for the year 2000, key practices for raising student achievement, descriptions of six successful high school and community college programs, eight models of integration, and Maryland's career development model.) (MN)

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MAKING HIGH SCHOOLS WORK THROUGH BLENDED INSTRUCTION

A Vision and Plan for the Integration of Academic and Career and Technology Education in Maryland

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William Donald Schaefer, Governor

This Glossary is provided to assist the reader in understanding terminology used in the document.

GLOSSARY OF TERMS

BLENDING INSTRUCTION

Blended instruction, in its broadest sense, is the uniting together of concepts, principles, content application and skills from both academic and occupational disciplines to form a more inclusive educational experience. It exhibits the potential to revitalize the way in which both academic and occupational education are delivered. In this report, blended instruction also means integrated learning.

CAREER AND TECHNOLOGY EDUCATION

Career and technology education, also known as occupational education, means organized educational programs offering a sequence of courses which are directly related to the preparation of individuals for entry into careers. Such programs include competency-based applied learning which contributes to an individual's academic knowledge, higher-order reasoning, and problem-solving skills, work attitudes, general employability skills, and the occupational-specific skills necessary for economic independence as a productive and contributing member of society. (Formerly called vocational-technical education.)

TECH PREP

Tech prep is a combined secondary and postsecondary program which leads to an associate degree, two-year certificate, or completion of an apprenticeship program. Programs offer a sequence of courses and experiences to provide high school graduates with a more technically-oriented background enabling them to make a successful transition from school to postsecondary technical education, to work, or both. Tech prep builds student competence in mathematics, science, and communications. It combines a common core of applied academic courses and technical courses at the high school level with programs offered through community colleges, apprenticeships, and proprietary schools to prepare graduates for technical careers. Tech prep programs often begin in the ninth grade and culminate with an associate's degree, certificate, or journeyman's status. Students may continue on for a baccalaureate degree. Tech prep targets students who have traditionally opted for the general track and have left school unprepared for employment or further education. In Maryland, there are 16 consortia involving every local education agency and community college in developing and implementing tech prep programs of study.

TECHNOLOGY

Technology is the application of knowledge, tools, and skills to solve practical problems and extend human capabilities. ("Technology - Report of the Project 2061, Phase I Technology Panel." American Association for the Advancement of Science, 1989.)

TECHNOLOGY EDUCATION

Technology education is an integrated, experience-based instructional program designed to prepare students to be knowledgeable about technology - its evolution, systems, techniques, utilization, and social and cultural significance. It results in the application of mathematics and science concepts to technological systems. Students are challenged to discover, create, solve problems, and construct solutions by using a variety of tools, machines, computer systems, materials, processes, and technological systems.

EXECUTIVE SUMMARY

At the national level, the call for school reform has been loud and clear. There have been numerous state and national reports criticizing the educational system for failing to adequately prepare graduates for employment and further education. The recommendations emerging from these reports call for student performance to be set at sufficient levels to ensure students access to equally rigorous curricula, preparing them to be workers, parents, citizens, and lifelong learners. This calls for an integrated or blended approach to instruction so that students can connect what they learn in class to the world outside.

This vision and plan for blended instruction in Maryland is the product of an interdivisional team of Maryland State Department of Education (MSDE) staff and an expanded team of local educators and other representatives. The team was charged with the task of devising a plan of action for the Department to assist in moving the blending of academic and career and technology education forward. The team prepared a vision statement, set strategic directions, analyzed barriers, and put forth a series of recommendations and actions to cover a five year time span. Key features of the paper are summarized below:

VISION STATEMENT:

- Every student participates in challenging and purposeful studies which blend theory and application.
- Every graduate demonstrates mastery of the work related and life skills required for a smooth transition into a globally-competitive, technologically advanced and service-oriented society.

REACHING THE VISION: Blended instruction needs to occur for all students at every level of schooling. Learning derived through the performance of tasks and projects encourages the use of information and skills and retention and application of knowledge. The high school program, because of its strong "by subject area" orientation, its tendency to isolate occupational and academic learning, and its lack of focus for youth who are not pursuing occupational or college preparatory courses--is the critical starting point for system-wide efforts to bring blended instruction to all students.

Strategies that require systemic change and become an essential part of school improvement planning have the best capacity to forge blended instruction. However, minimally the alignment and modification of the content of academic and occupational curriculum must occur so that coordination exists among courses.

A single seamless system of education is imperative and must incorporate the following five practices:

- (1) Schools structured to provide programs of study which prepare students for both employment and further education.
- (2) Blended curriculum that provides courses with academic rigor, world-of-work application, and outcome-based assessment as an integral component of instruction.
- (3) School staff working in interdisciplinary teams to deliver instruction through tasks and projects that focus on real-world applications.
- (4) Flexibility to permit students to move between and among paths based on individual plans that are updated, at a minimum, annually.
- (5) Multiple opportunities for students to engage in community-based learning.

To assist school systems and communities in achieving the vision for blended instruction as a system-wide practice, the Maryland State Department of Education will:

- (1) Continue to facilitate the visioning process for blended instruction at the state level to involve all pertinent stakeholders, and provide leadership to encourage school systems, communities, and schools to implement the visioning process.
- (2) Disseminate information that will increase public understanding of the variety of career and educational options available to students.
- (3) Support blended instruction by including the concept in grant programs that support the development and delivery of instruction.
- (4) Facilitate the adoption of working models, effective strategies, and promising practices of blended instruction.
- (5) Provide systematic opportunities for people to learn new roles and skills from awareness through skills transfer through a comprehensive system of professional development.
- (6) Encourage school improvement teams to include blended instruction in school improvement efforts.
- (7) Develop a multi-media presentation that depicts effective teaching strategies for the blending of academic and career and technology instruction.

- (8) Examine teacher certification requirements to determine the extent to which blended instruction is supported.
- (9) Ensure that all MSDE divisions demonstrate a commitment to blended instruction in all pertinent forums of policy-makers, administrators and teachers. Endorse products, actions and materials that model blended instruction as a basis for school improvement.
- (10) Ensure that MSDE units model an integrated delivery system. Include the concept of blended instruction as an integral part of the agency's planning process.

This concept paper includes an action plan for the Maryland State Department of Education to provide direction and support for integrated learning. To be effective, this action plan must be a collaborative effort among state and local stakeholders -- moving toward a common vision. As such, this document is addressed to the following audiences: MSDE professional staff, personnel in local education agencies, and other interested parties. As a Schools for Success strategy, blended instruction can contribute to local school improvement plans to ensure that changes from isolated to integrated instruction are institutionalized in Maryland's schools.

INTRODUCTION

In March of 1992, the Maryland State Department of Education (MSDE) formed an Integrated Learning Team that involved representatives from across the Department including academic, career and technology, and support services personnel. The internal team developed this concept paper, vision, and action plan for blended instruction and mapped out steps to be taken to move integration efforts forward in a systematic way in Maryland. Their work was enhanced by the involvement of an external team that expanded the scope of the initiative to a broader group of stakeholders.

The following process was used to guide development of the work and preparation of the resulting concept paper, vision, and action plan:

- . Creating a Shared Vision - The initial draft of the vision statement was refined and revised through an iterative process which included obtaining input from educators, business representatives, state and local advisory council members, and Department staff.
- . Analyzing Contradictions to the Vision - The team identified and analyzed barriers and constraints that impede progress toward the vision.
- . Setting Strategic Direction - Strategic directions were selected and recommendations formulated to focus the Department's efforts in expanding the use of integrated learning practices.
- . Designing Systematic Actions - The team identified specific actions to be taken over a five-year period to address recommendations.
- . Drawing up the Implementation Timetable - A timetable was subsequently prepared to scope out timelines for implementation over a five-year period.

This concept paper charts a course for the Maryland State Department of Education to provide direction and facilitate the use of practices that blend instruction. To be effective, this action plan must be refined and implemented collaboratively by state and local stakeholders to move toward a common vision of blended instruction as a fundamental element of school improvement in Maryland.

I. A VISION FOR BLENDED INSTRUCTION IN MARYLAND

VISION STATEMENT

A vision is a desired future state, described in present tense as if it is already a reality. The vision for blended instruction in Maryland is that every student participates in challenging and purposeful studies which blend theory and application and upon graduation, demonstrates mastery of the work related and life skills required for a smooth transition into a globally-competitive, technologically advanced, and service-oriented society. This vision was developed to span kindergarten to lifelong learning. However, this document focuses primarily on the high school years. This level was selected as a beginning point for the state's concerted efforts because the nature of high school scheduling and organization tends to isolate the way instruction occurs in classrooms. Ultimately, for the vision to be achieved, integrated learning must take place throughout the early, middle, and high school learning years and beyond.

A. DEFINING BLENDED INSTRUCTION

1. What is blended instruction?

Blended instruction, in its broadest sense, is the uniting together of concepts, principles, content application and skills from both academic and occupational disciplines to form a more inclusive educational experience. "In its simplest form, however, integration is nothing more than good, sound teaching practice--making abstract concepts more understandable by applying them to real-life situations." (Roegge, 1991). This definition of blended instruction focuses on the integration of academic and career and technology education. It is described in a number of ways, including interdisciplinary education, cross-curriculum planning, and applied academics. It exhibits potential to reinforce students' acquisition of basic and higher-order thinking skills, to enhance the rigor of career and technology education, and to revitalize the way in which both academic and occupational education are delivered.

B. MOVING BLENDED INSTRUCTION FORWARD IN MARYLAND

1. Four reasons why blended instruction is important.

- a. To achieve Maryland's goals for public education.
- b. To meet the needs of the workplace.

- c. To enable students to demonstrate knowledge in meaningful ways.
 - d. To provide better teaching, resulting in better learning.
- a. To Achieve Maryland's Goals for Public Education.

With the establishment of the Schools for Success initiative, along with ten goals and fifteen strategies for achieving them, the State Board of Education charted a new course for education in Maryland that complements the six national goals for education (Appendix A). One goal states that, by the year 2000, it is expected that 95 percent of Maryland's students will achieve a high school diploma and will be prepared for postsecondary education, employment, or both. Explicit to this goal is the elimination of the general education track and the implementation of quality learning opportunities with career applications that systematically bridge theory and practice for all students.

In concert with the Schools for Success initiative, the Maryland School Performance Program (MSPP) was established as an outcome-based accountability system to identify school improvement needs. The first time that student attainment was reported (1991), it was cited that 43.5 percent of graduates were prepared for postsecondary education, 13.6 percent were prepared for employment, and 2.5 percent were prepared for both. However, 40.4 percent were not prepared for either employment or further education (Maryland State Department of Education, 1991, p. 10). For these students, blended instruction brings relevance to the educational process.

- h. To Meet the Needs of the Workplace.

The call for a globally competitive workforce has been echoed in landmark reports, including The Report of the Secretary's Commission on Achieving Necessary Skills (SCANS) (1991) and America's Choice: High Skills or Low Wages! (1990). The employment and higher education communities in America have become increasingly disenchanted with the way high schools prepare students for employment and further education. These reports call for action to prepare students to meet the demands and needs of America's workplaces. One fundamental approach to addressing this issue is through the blending of academic and career and technology education. Blended instruction "is not simply a reform aimed at benefitting those students who are poorly served by the current structure of the

high school curriculum... It has the potential of improving the high school curriculum for everyone" (Oaks, 1991 p. 31).

The instructional delivery system for all grades and student populations will need to link content areas, provide learning in context, and relate learning to future career applications. While this is important for all students, it is particularly imperative in high schools where tradition has separated content areas into individually taught subjects; learning paths into three tracks-academic, vocational, and general; and has set theory apart from practice.

c. To Enable Students to Demonstrate Knowledge in Meaningful Ways.

The Maryland School Performance Assessment Program (MSPAP) includes criterion-referenced assessments that require students to apply what they know and demonstrate what they are able to do. This focus on application clearly demonstrates a strong commitment to redirect how students are taught in Maryland. The blending of instruction offers an opportunity for all students to access and succeed in rigorous programs of study designed to complement diverse learning styles.

By initiating a school performance assessment program that relies, in great part, on student performance of experiential and content integrated tasks that reflect high expectations, rigor, and use of critical thinking, students are using strategies that correspond to those identified by employers as key to success in workplaces.

d. To Provide Better Teaching, Resulting in Better Learning.

Extensive studies on the impact of blending academic and career and technology education have been conducted by the Southern Regional Education Board (SREB) State Vocational Education Consortium (Appendix B). Academic and occupational teachers were teamed to make learning more relevant to students in their classes. As a result of this approach, teachers reported an increase in student attendance as well as attentiveness. Teachers also reported they learned new strategies for teaching and developed renewed enthusiasm from working together.

Moving instruction from abstract to realistic applications can have profound effects on achievement. Positive outcomes for students have been observed in schools that have blended

students have been observed in schools that have blended academic and occupational instruction. In Rockbridge County (Virginia), eliminating the general track and blending academic and career and technology education have contributed to a decrease in the dropout rate from 6.6 percent five years ago to just under three percent in 1992. The failure rate declined from 9.5 percent to just under six percent in 1990. The average Scholastic Aptitude Test (SAT) scores jumped 47 points in the past four years and the graduation rate rose from 60 percent to 85 percent (Center for Law and Education, et.al., 1992).

Students in the SREB pilot sites learned to work in teams, developed problem-solving skills, and raised their level of competence in mathematics, science, and communications. Students reported that occupational teachers often stressed reading, mathematics and science skills. These same students demonstrated significantly higher average scores in all three subject areas assessed by the National Assessment of Educational Progress (NAEP) than students who reported no such emphasis by their vocational teachers (Bottoms, 1992). These are just a few examples of the achievements that students can make when academic and career technology education are blended in meaningful ways.

2. Review of Current Trends in Blended Instruction

Throughout Maryland, school systems and schools are conducting a number of efforts to blend instruction (Appendix C). While not yet widespread throughout the state, these efforts range from collaboration among several teachers in a school through system-wide reform efforts. At state and local levels, initiatives such as tech prep have resulted in quality blended instruction and programs of study that are rigorous, yet flexible. Since July 1991, every local education agency and community college in Maryland has been involved in tech prep consortia designing programs of study that increase students' academic and occupational competencies.

In some locations, tech prep has resulted in the complete restructuring of high school programs of study by eliminating the general track and integrating academic and occupational offerings. In addition, courses are being modified to integrate academic and occupational competencies by infusing Applied Mathematics, Applied Communication, and Principles of Technology into secondary and postsecondary curricula in selected sites. Since 1988, Maryland has also had two pilot sites participating in the Southern Regional Education Board's

Vocational Education Consortium to increase the mathematics, science, and communication skills of students enrolled in occupational programs. Six additional sites were added in 1992 and 1993 and the network of schools will continue to expand. These efforts form a beginning base for the integration of academic and career and technology education. The challenge is to make blended instruction prevalent for all students.

Blended instruction needs to occur for all students at every level of schooling. The performance of interdisciplinary tasks and projects encourages the use of information and skills and provides much more useful learning for students. However, the high school program, with its strong "by subject area" orientation and its tendency to isolate occupational and academic learning--is the critical starting point for strong, system-wide efforts to move blended instruction forward to benefit all students. Substantive changes at the high school level may serve as a driving force for blended instruction in early and middle learning years as well as postsecondary education so that all students may benefit from rigorous programs of study. Current trends that effectively blend instruction include cooperative learning, team teaching, "hands-on" or experiential learning, individually-paced instruction, performance-based assessment, and close linkages with business and the community.

Maryland high schools are beginning to bring together what are traditionally characterized as academic education and as occupational education, in a systematic manner, to form one secondary education program which has multiple options for students. The high school program and experiences must prepare students for employment and further education. Maryland high schools are striving to maintain high expectations and rigorous standards for all students by providing various pathways for students to achieve and demonstrate learning outcomes. This points to the creation of a seamless, single system of education that affords all students the opportunity to experience academic and career-related learning in tandem.

3. Five Key Practices To Promote Blended Instruction
 - a. Schools structured to provide programs of study that lead directly to employment or further education

programs. For blended instruction to occur for all students, schools must have the capacity to connect academics with career applications. The implications are that career and technology centers will need to increase the emphasis on academic learning and comprehensive high schools will need to incorporate career applications into academic disciplines.

Schools can be structured to promote blended instruction. Three options are: (1) academies, (2) occupational high schools/magnet schools, and (3) schools that are set up under occupational clusters, career paths, or majors (Appendix D). These options enable students to access rigorous pathways that are clearly linked to employment and further education. They also permit sufficient flexibility to allow students to change among pathways as they progress along the learning continuum. In moving toward school restructuring, initial actions should include: (1) revision of occupational courses to encompass academic outcomes, (2) development of new courses which include both academic and occupational learning outcomes, and (3) revision of academic courses to teach essential concepts through experiential and applied processes.

- b. Flexibility to permit students to move between and among paths based on individual plans that are initially crafted in grade eight and are updated, at a minimum, annually.

This will require that comprehensive systems in grades K-12, as illustrated in the State's Career Development Model (Appendix E), be put in place to ensure that students engage in career planning processes, have access to quality and timely career information resources, and are equipped to make informed career decisions. Through the crafting of individual plans, students will be coached by school staff, parents, and mentors to relate school courses to future plans and build the sequences of learning activities that will lead toward career goals. The process must provide sufficient flexibility to enable change as students become more knowledgeable, experienced, and clear about their own desired career/life direction.

- c. Academically rigorous curriculum that provides for blended instruction, world-of-work application, and outcome-based assessment as an integral component of instruction.

Critical to integrated learning is the establishment of expectations that students in both academic and occupational programs be able to apply what they learn. It is imperative that all courses provide academic rigor and that performance outcomes be held constant, but that time and methods vary to meet the unique needs and anticipated career directions of students. Consultation with business and industry is necessary to ensure the authenticity of instruction and real world applications of learning.

Alternative forms of assessment should be employed, such as portfolios, tasks, and projects, to determine the extent to which desired learning outcomes are met in context. In order to integrate knowledge and experience, students need to know content, processes and skills. Performance assessments are used to:

- (1) communicate to students standards and criteria that establish best possible performance.
- (2) engage students in tasks that are authentic and worthwhile.
- (3) focus students on essential outcomes of the curriculum.
- (4) provide students alternative ways to demonstrate their knowledge and skills.
- (5) require students to synthesize, evaluate, and use other higher level thinking skills rather than recalling facts and information.

Extra help and support to enable students to successfully complete a challenging program of study will need to be provided for students requiring supplemental assistance to meet expectations.

- d. School personnel working in interdisciplinary teams to deliver instruction through authentic, meaningful tasks and projects.

To encourage school personnel to work in teams and to permit the development and ongoing improvement of multidisciplinary and interdisciplinary instruction, flexible scheduling models will need to be adopted to allow for common planning time for instructional staff and to allow blocks of time for students to engage in active, laboratory-type, experiential activities. Teachers must be involved in the process to encourage commitment and use of integrated learning practices, as well as be provided with the time and support needed to create new teaching paradigms that are radically different from traditional practices.

The emphasis is to revise the instructional process so that the students are viewed as workers and are actively engaged in the learning process. This will result in changes in professional roles. Professional development is crucial to fostering team development, curriculum development, and the implementation of effective teaching strategies.

Professional development should include:

- (1) Opportunities for cross-program visitations so that teachers may observe working models of integrated instruction in action.
- (2) Opportunities for administrators, teachers, and guidance staff to network so that methods of systematic integration may be shared.
- (3) Internships in workplaces so that school staff may experience authentic applications and better understand the importance of teaching problem-solving, teaming, communication, and technology skills.
- (4) Improving guidance and counseling so that students clearly see the link between schooling and employment, enabling them to make more informed decisions as they mature.

(5) Opportunities for teachers to work together to develop integrated curriculum.

e. Multiple opportunities for students to engage in community-based learning.

Blended instruction is predicated on student attainment of knowledge and skills in a manner which enables them to make real world-applications. The use of authentic, meaningful tasks for learning and assessment is key. Instructional staff will need to engage business and community resources, from museums to agencies, in the planning and delivery of instruction to provide authentic, meaningful lessons, tasks, activities, and projects within the school environment and through off-campus community-based experiences (such as internships, community service, cooperative education, entrepreneurship education, apprenticeships, and staff externships). Providing opportunities for business partnerships is essential for young people to have venues to apply what they learn.

II. ACTION PLAN FOR BLENDED INSTRUCTION

The Integration Change Team was charged with the task of drafting an action plan to guide state level efforts to move blended instruction forward. The remainder of this paper highlights the barriers, challenges, and recommendations, and offers an action plan for the integration of academic and career and technology education.

Achieving the vision of blended instruction requires the involvement of a broad array of state and local stakeholders. Interagency coordination and strong linkages with the employer community and effective parent involvement are crucial to achieving the vision. Therefore, consensus among key stakeholders regarding these recommendations and actions will be needed to craft coordinated implementation strategies. Successful integration is dependent upon support, planning, and training. According to researchers at the Northwest Regional Educational Laboratory (NWREL), three major factors were missing when teachers attempted to blend academic and occupational education:

1. administrative and community support,
2. adequate time for teachers to plan together and share experiences, and

3. training in implementing integrated programs (NWREL, 1992).

While school system configurations vary, top level administrative support is essential to the success of any integration initiative. Efforts to systematize blended instruction with a focus on a pre-kindergarten to adult vision, will likely result in lasting change.

BARRIER I: THE MINDSET

- . Traditional stereotypes of academic and vocational education exist.
- . Career choices requiring preparation through means other than a four year college program are viewed as "lesser options."
- . The vision for blended instruction is not shared.
- . The important role of parents in the education of their children is not acknowledged.

CHALLENGES:

Create Broad-Based Awareness. There is a lack of understanding among critical publics regarding the skills needed and pathways that lead to employment preparedness. A four year degree from a postsecondary institution is attributed greater value than other means of preparation. Stakeholders and the general public need to view apprenticeship, career and technology programs, and combined strategies as important, effective, and valuable and begin to demand quality, accessible options for youth.

Continue and Expand the Visioning Process. Building a shared vision takes time, effort, and action. It is a continuous effort because it is a change process. As people and programs become more involved in blended instruction, and experience and understanding grow, the vision will also change form and mature. Because of this, it will be necessary to engage a wide range of people in the visioning process and to employ strategies that provide multiple opportunities over time to refine the vision, as well as strategic directions. Building a shared vision will result from information and participation in the visioning process--at the state level, the school system level, in the community, and in schools.

Dispel The Stereotype Through Action. Traditional stereotypes of academic and vocational education will continue as long as traditional programs and processes are prevalent. As changes are made, concerted promotion of the new paradigm will need to occur to increase awareness of students, parents, staff, and the community.

Promote Greater Parent Involvement and Participation in Education. Educators may be underestimating the impact that parents can have on the school achievement of their children, and, consequently, parent involvement may be a vastly under-utilized resource for schools. The benefits of parent involvement are not limited to early childhood or the elementary level. Consistent and enduring gains are being shown by children whose parents stay involved in their education throughout their school years. Parent involvement is a process, not a program of activities. It requires changing attitudes and behavior. Concentrated effort must be made to invite and encourage parents to become actively involved in the integrated learning visioning process at the state, school system, and school levels.

RECOMMENDATIONS AND MSDE ACTIONS:

- 1) Continue to facilitate the visioning process for blended instruction at the state level to extend participation to all pertinent stakeholders and provide models to encourage school systems, communities, and schools to implement the visioning process.

Action:

- 1.1 Develop a model process for visioning that can be used by local school systems.
- 1.2 Engage stakeholders in the state's visioning process using existing forums as a means for vision refinement.
- 1.3 Provide technical assistance, training, and support to local school systems in visioning for integrated learning.
- 1.4 Disseminate information to support school systems and schools in their efforts to involve parents in the visioning process for blended instruction.

- 1.5 Present the integrated learning visioning process to the 24 local MSPP parent coordinators and state and local Parent Teacher Association (PTA) representatives at the annual inservice meeting.
- 2) Disseminate information that will increase public understanding of the variety of career and educational options available to students.

Actions:

- 2.1 Implement a public awareness campaign that stresses the importance of career preparation and different paths to employment preparedness.
 - 2.2 Implement information dissemination strategies, such as newsletters and brochures, targeted to specific audiences.
 - 2.3 Develop and implement a marketing plan for integrated learning.
 - 2.4 Disseminate information on promising practices identified in Maryland and through the National Center for Research in Vocational Education (NCRVE) and the Southern Regional Education Board (SREB) (Appendix B) .
- 3) Direct funding to support integrated learning by including integration as a requirement for grant programs that support the development and delivery of instruction.

Actions:

- 3.1 Through a cross-functional team, determine grant and funding sources that can support blended instruction.
- 3.2 Direct funding sources and future proposal development to support blended instruction.

BARRIER II: CHANGE IS NOT EASY

- . There is a natural resistance to change.
- . People are not prepared for changing roles.

Schools are not organized to encourage integration.

Teaming is difficult.

CHALLENGES:

Support the Change Process. People fear the unknown and rely on the practices that are in their comfort zone. Resistance to change decreases when information, support, resources and encouragement are provided and when opportunities to experiment exist without the fear of fault. Most helpful are working models and tips from veterans who have tried and succeeded, as well as tried and failed. A most compelling factor in decreasing resistance to change is the presence and belief of "the need for change."

Prepare People for New Roles. Professional development is usually the most critical aspect of innovation. Administrators, teachers, guidance staff, community members and parents will need to be brought on board and provided with the information and skills necessary to participate in different ways. Teachers and counselors, in particular, will need to learn how to blend instruction and how to assist students in making decisions within the context of integrated education.

Redefine Organizational Structures. Organizational models exist that do not require substantial institutional change to provide multidisciplinary and interdisciplinary instruction. However, to meet the challenges of integration, some organizational changes are needed on the part of schools. Minimally, common planning times will help to facilitate teacher collaboration. The degree of structural change needed will be contingent upon the integration strategies employed. For example, schools that only offer career and technology education will require changes in staffing and structure to become comprehensive high schools.

Encourage and Support Teamwork. Structures will need to be put in place to foster teamwork among school staff and to encourage the use of outside resources. School staff will need to be prepared to work collaboratively and effectively in teams. Planning time will need to be available to identify curriculum connections and to plan projects and tasks. Time and strategies must also be provided for staff sharing and learning among implementation teams.

RECOMMENDATIONS AND MSDE ACTIONS:

- 4) Facilitate the adoption of working models, effective strategies, and promising practices of blended instruction.

Actions:

- 4.1 Assist local school systems in assessing the nature and extent of current integration efforts and in planning for expansion.
- 4.2 Identify models, strategies, and practices for blending instruction and teaming within and outside of Maryland.
- 4.3 Develop and disseminate an updated resource catalog of models and practices.
- 4.4 Direct discretionary funding to support innovation and the replication of promising practices.
- 4.5 Expand the network of Maryland schools in the SREB "High Schools That Work" initiative.
- 4.6 Conduct statewide and regional meetings to encourage networking and sharing of materials, methods, and lessons learned.
- 4.7 Facilitate cross-system visitations, materials and program development, and cross-system training.

- 5) Provide systematic opportunities for people to learn new roles and skills from awareness through skills transfer, through a comprehensive system of professional development.

Actions:

- 5.1 Establish centers for educational excellence to provide professional development on blended instruction.
- 5.2 Expand the network of schools implementing applied academics by offering training opportunities and by disseminating resources.

- 5.3 Link with teacher education institutions to offer applied academics instruction.
- 6) Encourage school improvement teams to include blended instruction in school improvement efforts.

Actions:

- 6.1 Identify school organization structures that foster blended instruction.
- 6.2 Train school improvement facilitators at the high school level in integration models, structures, and practices.
- 6.3 Provide technical assistance and support to school teams in designing and implementing practices that promote blended instruction.

BARRIER III: REQUIREMENTS ARE BY CONTENT AREA

- . Graduation requirements are by content area.
- . Requirements for teacher certification are content specific.

CHALLENGES:

View Blended Instruction As a Method. High School graduation requirements are a powerful driving force. Integrated learning methods provide ways for students to learn and demonstrate content area knowledge and skills in context. Content area graduation requirements and subject area outcomes state the "what is expected" and integrated learning strategies focus on the "how" content is learned, demonstrated and assessed. The blending of concepts, principles, and content from "academic disciplines" with context, application, and skills from career and technology areas is entirely possible with the newly adopted graduation requirements. It requires a shift in paradigm and practice.

Use Teamwork To Make It Work. Changes in teacher certification are underway and need to be examined to discover how they can support the vision for blended instruction. Yet, most models of integration do not require cross discipline certification as they are based on collaboration among staff, the sharing of expertise, and joint planning and delivery.

RECOMMENDATIONS AND MSDE ACTIONS:

- 7) Develop an instructional framework for the integration of academic and career and technology education that illustrates how theories and principles may be connected with practical application.

Actions:

- 7.1 Develop, refine, or extend instructional frameworks in academic content areas and career and technology education to emphasize interdisciplinary and integrated instruction.
- 7.2 Determine the role and place of applied instructional materials in Maryland's newly adopted high school graduation requirements.

RECOMMENDATIONS AND MSDE ACTIONS:

- 8) Examine teacher certification requirements to determine the extent to which blended instruction is supported and recommend changes as needed.

Actions:

- 8.1 Identify teacher certification issues that impede and/or facilitate adoption of practices that promote blended instruction.
- 8.2 Examine teacher certification requirements that impede integration and make recommendations for change, if needed.
- 8.3 Submit recommendations to MSDE leadership.

BARRIER IV: COMPETING PRIORITIES

CHALLENGE:

View Integration As A Means To An End. There will always be competing priorities for people's time. For blended instruction to truly move forward, it will need to be perceived as important by policy-makers, administrators, and teachers. Commitment to the concept and support of the process will need to exist to create flexibility in planning and instruction. Of critical

importance is viewing blended instruction as a means of meeting priorities. Integrated learning is not a goal in and of itself. Integrated learning provides a vehicle through which goals and standards will be met and school improvement can occur.

RECOMMENDATIONS AND MSDE ACTIONS:

- 9) Commit to integration in all pertinent forums of policy-makers, administrators, and teachers and in products, actions, and materials that relate to the improvement of high schools, as well as include blended instruction as a foundation element of MSPP.

Actions:

- 9.1 Include integrated learning as an important strategy in meeting Schools for Success goals.
- 9.2 Include career and technology related applications, to the extent possible, in the 11th grade MSPAP or local assessments.
- 9.3 Provide opportunities to implement blended instruction as a school improvement strategy in Challenge Grant Schools.

BARRIER V: MSDE IS NOT MODELING INTEGRATION

CHALLENGE:

Model Integration. The Maryland State Department of Education must be viewed by local stakeholders as an agency that models integration. If the Department wishes to be a leader in forging blended instruction, it will need to function as an integrated delivery system.

RECOMMENDATION AND ACTIONS:

- 10) Ensure that MSDE units model an integrated delivery system.

Actions:

- 10.1 Include integrated learning as an interdivisional APP objective.

- 10.2 Establish an interdivisional team to coordinate the implementation of the action plan for blended instruction.
- 10.3 Examine all of MSDE's priorities, programs, and funding to identify ways that each fosters and/or supports integration.
- 10.4 Train MSDE staff (interdivisional) in integration concepts and methods so that staff will promote/facilitate integration through their own school improvement and program development efforts.
- 10.5 Establish technical assistance cadres of MSDE staff in instruction, career and technology education, school facilities, special education, and support services to provide consultation and training to local teams as they implement integrated learning.
- 10.6 Include the concept of blended instruction as an integral part of the school facilities planning process.

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APPENDICES

APPENDIX A: CORRELATION OF NATIONAL/MARYLAND GOALS FOR THE YEAR 2000

NATIONAL GOALS

By the Year 2000:

All children in America will start school ready to learn.

The high school graduation rate will increase to at least 90%.

American students will leave grades four, eight, and twelve having demonstrated competency over challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.

U. S. students will be first in the world in mathematics and achievement.

Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

Every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

MARYLAND GOALS

By the Year 2000:

95% of Maryland's students will start first grade ready to learn as demonstrated by readiness assessment.

95% of Maryland's students will achieve a high school diploma and will be prepared for postsecondary education, employment or both.

90% of all Maryland's students who drop out of school will secure a high school diploma by age 25.

100% of Maryland's students will be functionally literate in reading, writing, mathematics, and citizenship.

95% of Maryland's students will achieve satisfactory levels of achievement in mathematics, science, reading, social studies, and writing/language usage on state developed assessment measures.

Maryland will rank in the top five states in the nation on national and international comparisons of student achievement and other measures of student success.

50% of Maryland's students will achieve excellence levels in mathematics, science, social studies, and writing/language usage on state developed assessment measures.

The number of Maryland's students pursuing postsecondary studies in mathematics, science, and technology will increase by 50%.

100% of Maryland's citizens will be literate.

Maryland schools will be free of drugs and alcohol and will provide a safe environment conducive to learning.

APPENDIX B: "HIGH SCHOOLS THAT WORK"

The Southern Regional Education Board Vocational Education Consortium's initiative is one of the major efforts supported by the Maryland State Department of Education. The Department plans to expand the number of schools engaged in the SREB initiative by establishing a network of "High Schools That Work" to raise the academic achievement of students.

The SREB Consortium has assisted states in creating a network of schools that are committed to:

- . The Consortium's goal of bringing career and technology education students' achievement in mathematics, science, and communications to the national average by the year 2000.
- . Integrating the basic content of college preparatory studies--English, mathematics, and science--with career and technology education by creating the essential conditions that support principals and faculties in carry out essential practices.

The Consortium is creating a network of schools within states and across the region that:

- . Learn from each other about how to improve secondary schools for the 50 to 60 percent of most high school youth who will be the region's front-line workforce;
- . Receive help in replacing the general academic curriculum with a more rigorous program of studies that serves to raise students' expectations, motivation, and achievement, and to better prepare students for employment and post-secondary education; and
- . Help sites find solutions to improve student achievement, as opposed to imposing a solution, based on the uniqueness of their school.

The essential practices and conditions identified for accelerating student achievement have proven successful in many of the existing SREB pilot sites. Maryland has two established sites in St. Mary's and Frederick Counties. There are four new sites in Baltimore City and five new sites on the Eastern Shore. The next step is to incorporate "High Schools That Work" into Maryland's school improvement initiative.

Key Practices for Raising Student Achievement

Taken together, key practices have the potential to change a school's core operation--its curriculum and the instructional practices. These practices require "whole school change;" they are a set of reforms that will affect the high schools organization and how it is staffed to educate all students. Secondary schools participating in this program will make a firm commitment to finding ways to carry out the following key practices.

- . Establish high expectations of students in both academic and vocational classes;
- . Revise vocational courses and develop new ones to expand significantly the emphasis on advancing the competencies of students in communications, mathematics, and science;
- . Revise academic courses and develop new ones to teach the essential concepts from the college preparatory curriculum through a functional and applied process that enables students to see how course content is related to future roles that they may envision for themselves;
- . Require general and vocational students to complete a structured and coherent program of study that includes three courses each in mathematics and the sciences. At least two credits in each area must be equivalent in content to courses offered in the college preparatory curriculum, with at least four courses in a vocational major, and two courses in related areas; or students must also complete an academic major of at least four additional courses;
- . Provide students access to broad fields of challenging and relevant vocational studies, such as Business, Medical and Health Sciences, Manufacturing Technology, Communications Technology, etc.
- . Provide the instructional process so that the student is a worker and is actively engaged in the learning process;
- . Provide guidance and counseling services to help students see the connection between what they are learning in school and their goals beyond high school, and involve their parents in the process of planning and annually updating a high school program of study;
- . Provide extra help that will enable students to successfully complete a program of study that includes higher level academic content;
- . Participate in and use student assessment and program evaluation information to check and improve the effects of curriculum instruction, school climate, and school organization and management.

APPENDIX C: ILLUSTRATIVE EXAMPLES

Washington County, Maryland

Students of South Hagerstown High School will help pilot a new program entitled Student Career Opportunity Paths in Education (SCOPE). Students will develop their career plans at the beginning of ninth grade around one of six career paths. The career paths are few and allow students to change, based on experience, knowledge and/or guidance. Each path is a cross discipline mixture of academic and career technology teachers who work collaboratively to integrate instruction. Computers are used to trace student career choice and revisions or changes in their plans. Teachers, counselors and administrators have been trained and will help students (and their parents) to continue to work toward career goals.

Frederick County, Maryland

In the fall of 1991, Frederick County Public Schools formed a major system-wide committee to study the integration of academic and technical education. The goal was to begin to take the necessary steps to reverse the lowered expectations and limited opportunities of former on-grade students. The plan includes elimination of the general curriculum and Criterion-Referenced Evaluation System (CRES). It begins with a focus on high schools, but intends to include a formal plan for grades kindergarten through eight.

Frederick County has been participating as one of the two original pilot sites in the SREB initiative to integrate academic and vocational education since 1988. The overall goal is to reduce the gap in achievement in mathematics, science, and communications among students in occupational and academic programs of study. Similarly, Frederick County is developing a system of integrated learning so that all students recognize the value of doing well.

Howard County, Maryland

Teachers in Howard County Public Schools use a curriculum connection model to organize curriculum so that the various discipline areas are integrated. This model, a curriculum planning wheel, "recognizes the interdependence of knowledge and its relationship to life." It enables teachers to make appropriate points of contact from other disciplines to the discipline being taught. Subsequently, students will understand the relationship between the various discipline areas in a holistic manner. In the summer of 1992, the planing wheel was used by a team of teachers representing a variety of disciplines to integrate academic areas with electronics in designing a tech prep program of study.

Prince George's County, Maryland

Vocational teachers and math teachers at Bladensburg High School have participated in a series of inservice workshops to enhance mathematical instruction in occupational classrooms. Initially, vocational teachers outlined for math teachers all of the contextual opportunities for math integration in their classrooms. The teachers shared ways in which various math functions could be addressed. Each of the eight math teachers aligned with a occupational teacher based on subject area congruence. The result of this collaborative effort has been the development of a series of team teaching units and/or lessons wherein math teachers and occupational teachers work together in the instructional process.

Southern Maryland Tech Prep Consortium

The Southern Maryland Tech Prep Consortium was formed in 1989 by superintendents of Calvert, St. Mary's, and Charles Counties and the president of Charles County Community College. Recognizing the emerging workforce demands would require changes within public educational systems, these leaders initiated a regional approach to the development of tech prep. Calvert County Public Schools developed sequential programs of study leading to academic and occupational tech prep. The programs of study integrate rigorous academics for all students and link graduates with appropriate next steps, whether that includes employment and/or further education. Similarly, Charles County Public Schools identified tech prep, occupational prep, and college prep options through sequential programs of study that support integrated learning. In St. Mary's County, the general track has been eliminated and tech prep and college prep programs of study have been put in place for all students. The program, which was fully in place for this year's freshman class, allows every student to study in one of four clusters: applied business/management, applied engineering/mechanical, applied health/human services or four-year college/university preparatory. The college-prep cluster has two paths: science/mathematics and humanities. In the eighth grade, students chose the cluster they will enter, based on career aptitude testing, individual counseling, and other data. The resulting "program of studies" is the blue print for their next four years with studies becoming more specialized each year.

Allegany Community College

The faculty of Allegany Community College are using a modified DACUM (Developing A Curriculum) process to integrate general and occupational education. They began by identifying the outcomes that associate degree graduates are expected to demonstrate. By linking instruction, curriculum, and assessment, the faculty is determining when concepts should be introduced, reinforced, or mastered in each course. Programs and courses will be mapped to ensure that content is appropriately sequenced and any gaps in the process are identified. Assessment will occur in a variety of ways and will be continuous in order to provide faculty members with opportunities to redefine curriculum and instruction and improve the teaching-learning process.

APPENDIX D: MODELS OF INTEGRATION

TABLE II
MODELS OF INTEGRATING VOCATIONAL AND ACADEMIC EDUCATION

	Curriculum Changes	Teacher Changes	Students Targeted	Institutional Changes
1. Incorporating more academic content in vocational courses	Vocational courses include more academic content	Vocational teachers modify courses	Vocational students	None
2. Combining academic and vocational teachers to enhance academic content in vocational programs	Vocational programs include more academic content, in either vocational courses or related applied courses	Academic teachers cooperate with vocational teachers	Vocational students	None
3. Making academic courses more vocationally relevant	Academic courses include more vocational content; sometimes new courses (e.g., applied academics) adopted	Academic teachers (usually) modify courses, or adopt new ones	Potentially all students; in practice, vocational and general-track students	None
4. Curricular alignment: horizontal	Both academic and vocational courses modified, and coordinated across courses and/or over time	Academic and vocational teacher cooperate; numbers range from two to all	Potentially all students; actual targets vary	None necessary Curriculum teams may foster cooperation.

Grubb, et. al., National Center for Research in Vocational Education, 1991.

	<u>Curriculum Changes</u>	<u>Teacher Changes</u>	<u>Students Targeted</u>	<u>Institutional Changes</u>
5. Senior projects	Seniors replace electives with a project; earlier courses may change in preparation	None necessary; teachers may develop new courses or modify content to better prepare students	All students	None necessary
6. The Academy model	Alignment among Academy courses (English, math, science, vocational) may take place	Academic and vocational teachers may collaborate on both curriculum and students	Usually potential drop-outs; sometimes students interested in specific occupational areas	School-with-a-school; block rostering; smaller classes; links to employers
7. Occupational high schools and magnet schools	Alignment among all courses may take place, emphasizing the occupational focus	All vocational and academic teachers assigned to an occupational school or magnet within a school; collaboration facilitated	students interested in specific occupational areas	Creation of a self-contained occupational school or magnet school
8. Occupational clusters "career paths," and majors	Coherent sequences of courses created; alignment may take place among courses within clusters	Teachers belong to occupational clusters rather than (or in addition to) conventional departments; collaboration facilitated	All students	Creation of occupational clusters; enhancement of career counseling; possible cluster activities

Schools for Success

**CAREER
DEVELOPMENT
MODEL**

**MARYLAND STATE DEPARTMENT OF EDUCATION
DIVISION OF CAREER TECHNOLOGY AND ADULT LEARNING
DIVISION OF COMPENSATORY EDUCATION AND SUPPORT SERVICES
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VISION

FOR A CAREER DEVELOPMENT SYSTEM IN MARYLAND

Career development is a process that begins in childhood and continues throughout life. It is the combined responsibility of parents, the community at large, and education. The educational system plays a vital role in the career development process. It is responsible for implementing a systematic process through which students can develop the skills and knowledge necessary to make appropriate and informed career decisions and prepare for lifelong learning. The system is integrated and collaborative, involving a partnership among all aspects of education and the community. The career development system implemented is one whose outcomes are measurable and competency-based.

Eight process steps form the foundation of the career development system. They are :

- . Self- awareness**
- . Career awareness**
- . Assessment**
- . Career exploration**
- . Planning/decision making**
- . Career preparation**
- . Job seeking / advancement**
- . Self- assessment / redirection**

While the process steps may take place at various grade or postsecondary levels, with specific and appropriate activities, every step is necessary to a comprehensive career development system. Achievement of competencies associated with the process steps will help ensure that students meet the goals of public education in Maryland and are prepared for employment or postsecondary education or both.

CAREER DEVELOPMENT IS A SYSTEMATIC EIGHT STEP PROCESS, AS INDICATED IN THE FOLLOWING CHART.

Process Step	K-3	4-8	9-12	Adult/Post Secondary
1. Self awareness	X	X	X	X
2. Career awareness	X	X	X	X
3. Assessment				
- Formal	X	X	X	X
- Informal	X	X	X	X
4. Career exploration	X	X	X	X
5. Planning/decision making	X	X	X	X
6. Career preparation			X	X
7. Job seeking advancement			X	X
8. Self assessment/redirection			X	X

PROCESS STEP	OUTCOMES	SUGGESTED ACTIVITIES
SELF AWARENESS	Identify personal interests, abilities, strengths and weaknesses and their influence on career choice	Curriculum infusion; classroom developmental guidance
CAREER AWARENESS	Demonstrate locating, using and understanding career information Demonstrate knowledge of a variety of career clusters	Field trips; orientation to career / non traditional careers; hands on activities; exposure to occupations
ASSESSMENT	Describe possible career choices, based on the results of formal and informal assessment	Assessments: Formal informal tests of interests and abilities
CAREER EXPLORATION	Describe potential outcomes of career decisions	Internship, mentor programs, cooperative education, summer programs, different work settings
PLANNING / DECISION	Develop a career plan	Group guidance activities; curriculum infusion; parent involvement; alternative planning skills; career folders
CAREER PREPARATION	Demonstrate skills to enter and participate in education and training	Tech prep, curriculum offerings, integration
JOB SEEKING/ ADVANCEMENT	Demonstrate skills to prepare to seek obtain, maintain	Flexible delivery strategies; curriculum infusion; experiential opportunities; maximize use of community
SELF ASSESSMENT/ REDIRECTION	Demonstrate skills to make career transitions	Curriculum infusion experiential opportunities community resources

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