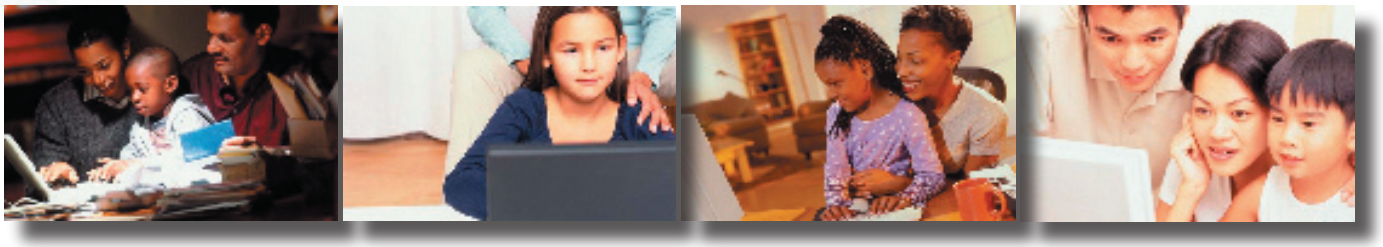
BROWARD COUNTY PUBLIC SCHOOLS

CHANGING THE LEARNING ENVIRONMENT FOR OUR STUDENTS: VISION INTO ACTION

REPORT BY:
THE DIGITAL NATIVES COMMITTEE

SCHOOL BOARD RETREAT

April 13th, 2004



BROWARD COUNTY PUBLIC SCHOOLS

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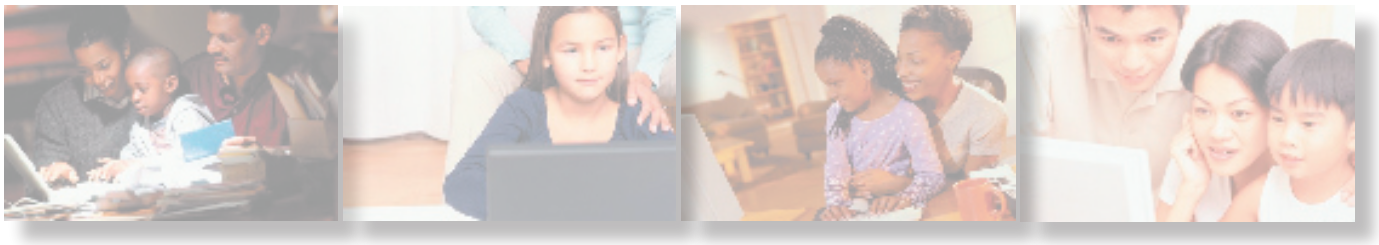


Planning Document

Changing the learning environment for our students: Vision into Action

Executive Summary

The Curriculum and Instruction/Student Support Division was charged with drafting an Instructional Technology Planning Document. To implement this charge, an informal group called the Digital Natives was brought together to continue the work previously presented to the School Board on November 25, 2003. Specifically, the group was charged with presenting ideas and recommendations that would assist Broward County Public Schools with implementing its vision. Therefore, this document sets forth the vision for the role of instructional technology in the curriculum and instructional programs of Broward County Public Schools. The goal of the document is to provide initial steps to assist in reaching the vision of empowering students to become lifelong learners capable of using technology for critical thinking, problem solving, virtual learning and increasing student achievement. From this stage, these ideas will need to be reviewed by representatives of key stakeholder groups for input including the Technology Advisory Committee, principals, teachers, students, parents, district staff and other community members. *Importantly, while there is funding to complete an initial study, long-term implementation would require substantial funding commitments.*

This document aligns with the current 2002-2007 Information Technology Plan, Technology Goals and Objectives, the district adopted Strategic Plan goals and objectives, No Child Left Behind mandates in relation to technology literacy and highly qualified teachers and 21st century skill development for students. Once the new strategic plan is adopted, this document will be aligned to its goals and objectives.

The Instructional Technology Planning Document outlines initial steps that can assist BCPS with reaching its long-term vision. This document was developed by SBBC staff who understand the culture of the institution and also have passion for the district's mission. On the other hand, the IT Blueprint will be a long-term operational plan that supports the district's instructional technology vision. The development of the IT Blueprint brings in outside expertise from CELT to work with staff to apply best business practices to the operational side of the district's technology program. It will address infrastructure issues ranging from capacity planning to quality assurance to comprehensive technical support. **These two efforts are intended to move forward in tandem. In fact, they will naturally align to support Broward County Public School's vision into action.**

Major points discussed in this document include:

1. **Digital Learning Environment Study**. This initiative would engage school-based administrators and teachers in a Plan, Do, Study, Act cycle to reveal the issues and impact of transitioning to a digital learning environment. Part of this study would include creating "test sites" that provide access to technology to students on a 24/7 basis.

2. **Curriculum Development/Instructional Management:** This initiative initially creates a single access point for curriculum and instructional resources for all teachers and over time will be available to students, parents and administrators.
3. **Staff Development:** This initiative would expand the existing comprehensive technology integration staff development programs offered by the district for teachers and administrators.
4. **Leasing vs. Purchasing:** This issue explores leasing as an option to procure hardware as a potential cost reduction alternative and as a method of addressing obsolescence and disposal of computer hardware.
5. **Re-designing classrooms:** This section provides initial ideas on how the physical classroom might be re-designed to meet the needs of an educational system that supports BCPS vision for future learning.
6. **Curriculum Resources**: This section looks at the issue of standardizing on the curriculum tools and software available to schools to ensure consistency of education for all students in BCPS.
7. **Cost Implications**: This section gives preliminary cost figures for the proposed projects.

It is apparent that implementation strategies will be a joint responsibility of school and district staff, business partners and community members working together towards a mutually shared vision. While this document provides a starting point, it is again important to note that success can only occur with the active participation and support of the entire community that is called the "Broward County Public Schools." Therefore, the next steps in this process are to engage the BCPS community is an active dialogue around the key premises being proposed.

1.1 Background

From 1996 to 2001, Broward County Public Schools embarked on an ambitious five-year Information Technology Plan focused on providing all schools and district sites with a state of the art technology system. The School Board's commitment to implement this technology system is grounded within School Board Policy 5306 that states, "Technology will be appropriately and equitably integrated into instruction and management and used by all students and staff as an integral component of school improvement and student success." Initial system implementation strategies in the Information Technology Plan focused on meeting the needs of the school and district in two major areas:

1. Providing a modernized networked environment that would interconnect all schools and district sites into a single communication and information exchange system.
2. Providing a baseline of hardware, software and training that would enable schools to begin to effectively utilize the capabilities of the networked environment for teaching and learning.

As a result of the first five-year Information Technology Plan, all schools are connected to the district's Wide-Area Network and every permanent classroom has Internet access. In addition, permanent classrooms were provided with a telephone, a minimum of two computers and a printer. Over 50% of classroom teachers were provided with a laptop computer and a variety of software applications are available for teacher use. The training of teachers, administrators and support staff in the utilization of the technology supplied has been provided by a variety of district and school programs and initiatives.

While significant progress has been made, the major goal from 2001 is, and continues to be, to effectively utilize technology in the teaching and learning process for student achievement.

Federal legislation under the "No Child Left Behind" Act of 2002 has also significantly impacted the direction of technology integration in Broward County Public Schools. NCLB specifically states that by 2006 every student will be technology literate based on national educational technology standards.

Technology planning, staff development and training in the educational use of technology are crucial factors in determining the effective use of technology in the learning environment. Several steps have been taken to provide opportunities for teachers, staff and principals to improve their knowledge, skills and abilities and to plan effectively for technology integration. In addition, several district initiatives have contributed to providing web-based resources to assist teachers and administrators with using technology as an integral part of the teaching and learning process.

1.2 Accomplishments

Over the past two years, several major initiatives have contributed to the creation of a digital learning environment for teachers and students. The programs listed are examples of these collaborative, inter-departmental efforts:

Learners and Learning

- **Atomic Learning** provides "just in time" training in basic technology literacy skills. Teachers, students, parents and staff use this system to assist students in meeting National Educational Technology Standards. Along with this initiative, a teacher-focused staff development program has been designed in an effort to meet No Child Left Behind guidelines and to assist teachers with incorporating National Educational Technology Standards for students into curriculum delivery. During an intensive three-hour session, instructional staff are engaged in student-centered learning strategies while embedding this resource deeper into their existing lesson plans as well as gaining access to new ones. Upon completion of staff development, participants have the necessary resources and skills to facilitate a similar training activity with their peers. This serves as their follow-up activity and assists with bringing this resource to schools. http://broward.atomiclearning.com

- **Broward Virtual Education (BVEd),** Broward's online high school, delivers online courses "anytime, anywhere" to students. . BVEd offers 33 regular and honors level courses and eleven advanced placement courses. Students can take online courses while taking traditional courses at their school. Students can also be full-time online students. http://www.bved.net

- **Broward's distance learning** program is a major contributor to virtual education with over 120 video-conferencing units, nine academic high school courses, 1,250 academic programs, field trips and special events for elementary, middle and high school students. In addition, staff development opportunities have continued to increase with such offerings as: National Board Certification workshops, ESE training and meetings between Curriculum Supervisors and their department heads.

- **Adaptive Technologies** are pervasive throughout our schools. Students with special needs have available to them a variety of technology tools to assist with their learning. The ESE department provides extensive staff development to support the effective use of adaptive technologies through both online and traditional delivery of instruction. A Universal Access Grant provided many of our schools with accessible computer stations in media centers.

- **Virtual Technology Recognition Project** is an opportunity for educators in Broward County to share technology-enhanced lesson plans and curriculum projects that focus on the Sunshine State Standards (SSS) and the National

Education Technology Standards (NETS). All projects are accessible through a web-based database that can be accessed by all teachers at: http://www.broward.k12.fl.us/etscsds/bestpractices

- **Textbook adoptions** took a new spin this year towards the digital world when the technology components of each textbook were considered as part of the selection process. Now, digital resources aligned to textbooks are available in the areas of mathematics and language arts. The technology related components are the first steps in providing state adopted digital curriculum that is aligned to Sunshine State Standards.

Educator Competency and Professional Development

- The **Digital Education Teacher Academy (DETA)** is a district-wide professional development program in partnership with the Teaching and Leadership Center @ Florida Atlantic University for "retrofitting" teachers to integrate technology into the curriculum. Since its inception, this partnership has facilitated 59 sessions with 907 participants. In addition, the DETA Learning Community provides support for teachers who have completed one or both DETA courses. The Learning Community meets monthly at various schools throughout the county. Each Learning Community session is designed to focus on a technology integration skill that will help DETA graduates keep the "digital fires" alive in their classrooms. In addition to attending monthly learning community sessions, participants share best practices using Blackboard, an online course system. http://web/deta

- The **New Teacher Academy** assists teachers in utilizing the technology tools and curriculum available at each school. Through this program, new teachers are introduced to the technology available to Broward County teachers. http://web/hrd

- **SBBC Virtual University** provides online staff development to teachers in the areas of classroom strategies and course content. These in-service courses are designed to provide educators with the opportunity to participate in staff development training at their convenience. SBBC Virtual University (VU) now provides training yearly to some 4000 teachers from Broward schools, Broward Charter schools and private schools participating in Federal grants. By the fall of 2004, SBBC-VU will have more than 90 courses for instructional staff designed and developed by district employees. SBBC-VU now offers a fully functioning online registration system, complete with instant notification. Starting in the summer of 2004, the district will offer its reading endorsement training online (11 reading courses). SBBC-VU has established 30 learning communities that are moderated by National Board Certified Teachers and Broward Guild Member Teachers.
http://www.broward.k12.fl.us/ci/virtual_university

Accountability

- The **Data Warehouse** has dramatically changed the way Broward educates students and propels them to achieve beyond what was previously thought to be attainable. Data Warehouse use permeates nearly every aspect of reporting, monitoring, class management, test score improvement, and student counseling. What was once a data starved organization—is now data driven. The focus of the Data Warehouse project is to provide administrators and teachers with access to the kinds of student performance information they need in order to support individualized educational planning, instructional design decisions, and school improvement planning at the local school level. http://www.broward.k12.fl.us/dwh

- A new dimension of the Data Warehouse, Broward School's **Virtual Counselor** provides administrators, teachers, students, and parents with easy access to the data warehouse with only a web browser. Providing a user-friendly web interface, Virtual Counselor enables teachers and school administrators to access the data they need to customize the educational environment and allows students and parents to take ownership of their educational records. Teachers are able to easily view student test score information and have it linked to online technology-based lesson plans aligned to the FCAT subtests for use in their classrooms. High school students are able to track valuable graduation progress information to make sure that information critical to the college application process like grades, test scores, service learning hours, etc., have been properly recorded. **Virtual Counselor** is a tool that is constantly being improved. http://www.browardschools.com/virtualcounselor

- At the start of the 2003-2004 school year, the **Academic Improvement Plan** (AIP) was added to Virtual Counselor, converting a previously paper and pencil form to an electronic format. Now AIPs will be centrally stored, tracked, updated and available to all schools as students move around the district.

- Cypress Bay High School will be testing a new process that will allow all of their students to enter their course requests for the 2004-05 school year using **Virtual Counselor**. This is the next step in supplementing the role of the guidance counselor in the schools by automating routine functions.

- This year, the district created and administered it's own **benchmark assessment** test (BAT) to students in all grades 3-10. The purpose of this assessment was to provide schools with data that could be used to guide instruction as an indicator of academic achievement. It also acts as a predictive indicator of how students would perform on grade-level FCAT if FCAT were to be given on that date. The tests, administered in September and December, were scanned and scored locally with results reported to

school staff via the Data Warehouse and Virtual Counselor. An analysis of the results of the BAT test found a high correlation with FCAT 2003 data. The scores will be analyzed in relation to FCAT 2004 data for validity and prediction confirmation once that data is available.

Technology Administration and Support

- Technology integration courses for administrators are now being offered through the Human Resource Department Leadership Development for Lead Teachers, Assistant Principals, and Intern Principals. A new electronic tool called the **"My Electronic Portfolio"** provides a web-based system has been developed by TLC@FAU in collaboration with HRD leadership development and administrative procedures department for the purpose of documenting the application of highly effective educational practices of school administrators. Administrators use this tool to create, maintain and update their professional portfolios on the Internet. "**My Electronic Portfolio"** is an instrument to exhibit benchmark performance to elicit feedback, discussion and self-reflection.

- The School Technology and Readiness Survey (STaR) solicits responses from K-12 principals about technology and its utilization at their respective schools. The results are incorporated into the School Improvement Planning annually. This provides valuable data to be used for school and district technology planning and for federal reporting required of Enhancing Education Through Technology (E2T2) grant recipients. www.starsurvey.net

Technology Capacity

- Laptop computers are becoming available to all teachers.

- Currently, students use computer labs, wireless carts, media center resources, classroom computers and other digital devices in the teaching and learning process.

- All Local Area Networks (LANS) administered by ETS are consistent in design, documentation, installation and maintenance. BCPS is considered "best in class" for LANS in K-12 public schools (CELT, 2003).

- A resource bank of online lesson plans, curriculum maps, internet-based curriculum and student achievement data is now available to the classroom teacher to assist with technology integration.

Communication

- **Communicating Across Broward (CAB)** is the district's new centralized system enabling all employees to send and receive messages, maintain events and tasks in a calendar. The most popular and well-received component of the

system is conferencing. This provides users with the ability to collaborate via threaded discussions on specific subject matters. http://web/cab

- Fifty members of the **National School Board Association (NSBA)** spent two and one half days in Broward County Schools getting a first-hand look at how technology is improving student achievement. The group, composed of superintendents, chief operating officers, teachers, parents and school board members from across the country, visited classrooms throughout the county to observe students and teachers actively involved in using technology in the teaching and learning process.

1.3 Data Collection Methods

Background information needed to draft this planning document was collected from the following sources.

- Feedback on various instructional technology initiatives from the Technology Advisory Committee (2000-2003).
- Research from the literature on the role of education in future schools and one-to-one computing initiatives in the United States.
- An analysis of the Florida Department of Education STaR (School Technology and Readiness) survey data for schools in Broward County.
- Evaluation reports from the Broward Virtual University and Digital Education Teacher Academy initiatives.
- Site visit to Henrico County, Virginia by Broward Staff. Henrico is implementing a one-to-one initiative in its middle and high schools.
- The District Information Technology Plans from 1996 to 2001 and from 2002-2007, including section 8.1, professional development.
- CELT assessment report, 2003.
- Curriculum Development/Instructional Management Conceptual Design Paper, SBBC, 2000.
- Conversations and meetings with various financial agents on leasing and Total Cost of Ownership.

The purpose of the data analysis was to:

- Identify accomplishments in the current instructional technology program.
- Prioritize near-term technology initiatives
- Identify challenges and potential barriers.
- Identify the alignments with the IT Blueprint process.

1.4 Identified Challenges

In order to implement a comprehensive instructional technology focus throughout the district, several challenges need to be addressed on a continuous basis:

- A shared vision of instructional technology in the classroom needs to be continuously communicated to district and school leadership and instructional staff.
- Teacher and student technology literacy will need to continuously be incorporated into the school improvement planning process to meet No Child Left Behind mandates.
- "Digital Divide" issues must be addressed so that all students have equitable access to technology during and beyond the school day.
- The community must understand and embrace the district's instructional technology vision.
- The business community must understand and endorse the district's instructional technology vision.
- Our higher education partners must understand and support the district's instructional technology vision.
- There is not a systematic plan in place for building capacity of technology support and curriculum integration in the schools and district offices.
- There is no system of accountability to ensure that teachers are integrating technology into classroom instruction.
- Funding has to be identified over the long-term to sustain the technology investment.

The data analysis indicates that, while significant progress has been made, the major challenge for BCPS is to systematically use technology effectively in the teaching and learning process. The district must continuously improve and support the systemic utilization of technology in the classrooms to positively effect student achievement. This planning document will assist in this endeavor.

2.0 Vision of the learning environment of the future

New technologies raise great expectations. The exponential rate of technological advances demands that school districts prepare students for the future with the 21st century skills to access and evaluation information from a variety of digital sources. The vision for Broward's digital natives and its digital immigrants lies within the bounds of this very core belief. *Broward is undergoing a remarkable transformation, and the vision is to close the gap between how students live and how they learn in school.* This is also essential if we are to provide equal opportunities for our students as it becomes apparent that students without access to technology at either school or at home will be at a disadvantage in 21st century society. Therefore, providing students with routine and regular access to technology both from school and home will be an integral part of the educational plan.

Broward's digital learning environment aligns with Istances (2002) Re-schooling concept. Transforming the culture of Broward's schools into ***Community Learning Centers*** with 24/7 learning opportunities, unleashes time as a constant and repositions it as a variable creating a new phenomenon of learning which goes beyond the "Limits of the Known." The boundary lines of traditional opening and closing times, row-to-row classroom learning environments, daily didactic instructional delivery methods are erased. Instead, flexible scheduling of classes allows students to learn during and beyond calendar time, the Internet allows learning to continue "anytime, anyplace", and a re-designed learning environment provides an interactive venue for students to collaborate. In fact, this technology rich environment connects students and teachers to a wealth of information and curricular content and allows them to communicate with each other and anyone else from a large network of learning specialists.

A highly technical learning environment offering a variety of learning options takes the best of the future scenarios, integrates the research on the growth and development of today's students and incorporates 21st century skills with various learning modalities. In such a setting teachers are able to customize learning pathways to meet the individual needs of all learners. One might envision an area for small group presentations with a permanently set up video projector device and a laptop. Students use technology to present their understanding of subject knowledge and learning stations accent areas of the environment where technology tools play a role in teaching reading, mathematics, social studies and science. Students with a well-rounded understanding of subject content and an atmosphere of discovery, deep thought, reflection, participation and interaction are given opportunity after opportunity to grasp concepts and demonstrate proficiency within the comfort zone of their own unique virtual learning sphere. The teacher is facilitating and coaching the learning and has a firm understanding of each student's learning needs because she has immediate access to data to assist in grouping, planning and delivering learning programs. Students are "techdextrous" to coin a new phrase, due to their technological versatility. The public school learning experience comes equipped with one-to-one computing, virtual learning delivery systems, and digital learning devices (laptop or new device) that give students access to information in and from digital

formats. The expectation for these "digital natives" is nothing less than mastery of 21st century skills.

Parents have immediate access to information on the progress of their children, colleges and universities, financial aid opportunities, online training, and school information. More importantly, parents can now use the same instructional resources their children are using at school so parents can continue the learning process at home. In addition, parents can readily communicate to teachers and school staffs and benefit from the global power of the Internet.

Imagine students taking classes via an online environment where participation in full-time online instruction or a combination of online and traditional classes is common practice. Since student-to-student interaction is also an essential component of learning, students will have opportunities to join learning community networks and work together on group projects and activities. The critical 21st century skills that are central to student development include: becoming team players, taking on leadership roles, being critical thinkers, having good interpersonal skills and being active citizens in the community. These skills are also advocated by business organizations (SCANS report) and reflect the skills needed in a global working environment.

Technology is seamlessly integrated into all instructional and management operations because a well-trained and efficient support level of staff is provided. Visionary leaders have embraced new roles as futurists, lifelong learners and have transitioned into "digital natives" themselves. They are at the helm of these learning environments, guiding the continuous improvement of instructional, non-instructional and technical operations that are impacting the daily life of all stakeholders – directly and indirectly. These visionary leaders learned the lesson of the ages: *that having a highly efficient and effective technology support system is paramount to the successful creation of this new digital learning environment.*

In the end, the ultimate result of the vision is that all students are succeeding at high achievement levels and are part of an engaged, active learning community known as Broward County Public Schools.

3.0 Implementation of Vision – Digital Learning Environment Study

Transforming the nature of teaching and learning in Broward County Public Schools will involve examining current and longstanding patterns of values, beliefs and traditions that have been formed and accepted over the course of the history of the district. In order to effectuate this change, the district needs to provide the appropriate digital foundation and strategy with such things as digital content, digital curriculum, and technical support. Then each school will blend the foundation with its own local needs to map out a course to translate this vision into reality.

Change is not easy, and the implementation of a digital strategy across the district must be woven into school environments that already are full with mandates and accountability. Therefore, it is suggested that there are two concurrent "next steps" in the near-term. These two projects will take one school year to complete, and combined they will provide data and input for effective decision-making for a multi-year instructional technology plan:

1. **School-based administrator, teacher and parent study groups**
2. **A minimal number of test sites to create a digital learning environment**

The first effort is to engage school-based administrators, teachers and parents in study groups to dialogue about the district's instructional technology plan. School-based staff would have the role of implementing an instructional technology plan in the classroom, and they represent the group where the "rubber meets the road." Therefore, they are best positioned to find "synergy" between an instructional technology plan and instructional practices. District staff must support these study groups and a plan will need to be developed to define the outcomes. The plan must provide incentives, such as teacher stipends for hours beyond contract for their participation. This represents the "Plan" stage of the Sterling Plan-Do-Study-Act process.

The second effort would be to establish a minimal number of schools as test sites (1-4) in order to gather data. ***These schools would implement as many components of the instructional technology plan as possible, such as age-appropriate personal learning devices, redesigned classrooms, and electronic textbooks.*** Data from implementation at these test schools would feed into the study groups. Data and evaluation of these test schools, which is the "Do" stage of PDSA, would be used to refine the instructional technology plan in the "Study" stage. The "ACT" stage would conclude with the development of a multi-year instructional technology plan, a formal public vetting process, and fiscal plan. Data would reveal the issues and impact of the following factors, as well as identify other implementation issues:

- Community Involvement
- School Leadership
- Learning Environment
- On-going professional development
- Digital curriculum and content
- School/District Based Technology Support

The following section delineates the factors that would be addressed in this "digital learning environment" study process.

3.1 Community Involvement

Research confirms that successful school reforms that require changes to current practices must have full community involvement and support. Studies also show that new innovations are relatively easy to start, but difficult to sustain, and a comprehensive examination of all aspects by the community is a critical element for success.

3.2 Role of Leadership

As the research literature confirms, leadership is the single most important factor affecting the successful integration of technology into the curriculum. In particular, school leadership supports the integration of technology and is able to recognize effective practice when it is occurring in the classroom. Accountability for technology integration for both administrators and teachers is key to success. Teachers need to know the expectations for utilization of technology for student achievement. In addition the leadership needs to communicate the vision and to produce an atmosphere in which teachers feel safe in developing new teaching styles. SBBC professional development for administrators must address the ability to direct, guide and evaluate the effective use of technology as an integral part of student achievement. In a preliminary evaluation report that was recently completed in February 2004 by the Teaching and Leadership Center @ FAU in collaboration with the HRD/Leadership Development found that proficiency in technology integration, instructional leadership, policy/contracts, curriculum, legal issues, strategic planning/school improvement and resources are required for excellence in school based administration.

3.3 Digital Learning Environment

The challenge faced by educators is to utilize and channel the power of rich media and communications/collaboration in the teaching and learning processes taking place in classroom settings every day. By correctly deploying technological enhancements in its classrooms, Broward Schools hopes to "remodel" the classroom experience, captivating student's interest and imparting skills and knowledge in new more relevant ways. Improvements in student achievement are expected to follow. So the question arises, "What will this new learning environment look like?" Broward educators, as a part of the visioning exercise currently underway, have drawn a conceptual draft of what this new world might look like. The information below lists the components of the remodeled learning environment and intends to draw the links between what would be provisioned, how teachers will be able to teach, and how students will learn – all in ways that reflect the media rich world around and build upon core concepts of pedagogy. The table below provides a comparison of the traditional to the new learning environment

TRADITIONAL LEARNING ENVIRONMENTS	NEW LEARNING ENVIRONMENTS
From	To
Teacher-centered instruction	Student-centered Instruction
Single-sense stimulation	Multisensory stimulation
Single media	Multimedia
Isolated work	Collaborative work
Information delivery	Information exchange
Passive learning	Active/Exploratory/Inquiry-based learning
Factual, knowledge-based learning	Critical thinking and informed decision-making
Reactive response	Proactive/planned action
Isolated, artificial context	Authentic, real-world context

Another key concept is that the face to face teaching activities in the remodeled classroom need to be enhanced – to leverage the availability of new teaching tools that much more dramatically appeal to student's eyes and ears. To this end, the inclusion of the following modifications and enhancements are being proposed for the "remodeled" learning environment.

- A digital device for each student (varied by grade level / program)
- A laptop computer for each teacher
- Overhead, Ceiling-Mounted Multi-media Projector
- Interactive White Board
- Mounted Speakers – Sound Amplification System
- Multiple Media Input Options in Teacher Control Panel
- Campus-wide Wireless Network Connectivity

These technical components each have a variety of features that are not delineated here in this summary. However, it is important to note that each feature is included because of the benefit it brings to engaging students and complementing the diverse learning styles of all students in Broward classrooms.

3.3.1 On-going Professional Development

Teachers who are highly qualified to integrate technology into the curriculum can maximize the utilization of the digital tools and curriculum content to improve student learning. In addition, teachers need to expand their teaching strategies to include more constructivist approaches that actively involve students in their own individual knowledge and skill attainment. The on-going professional development of teachers is a joint responsibility of both the school district and the individual school. A rich program of staff development offerings delivered through a variety of online and traditional methods will greatly assist teachers with seamlessly using technology in the learning environment. Opportunities for staff development through the district will be presented in section 4.5. Research indicates that a school's staff development program that focuses

on mentoring, coaching, modeling and connecting teachers through learning communities fosters an atmosphere of team building, support and sharing of best practices.

3.5 Digital Curriculum and Content

Section 4.4 of this report provides an overview of some the digital curriculum content and productivity tools currently used in the schools and the need to standardize on major curriculum systems. This content needs to be delivered through a single, web-based interface to maximize the effectiveness of its use for student achievement.

3.6 Site-based Technology Support

As part of the IT Blueprint process, a project entitled, "IT Staffing and Organization" will develop and implement a comprehensive staffing and organizational development plan for IT management/support at the school, area and district level including the help desk function. This project directly supports the goals of the Instructional Technology Plan and will be a major initiative that will ensure success of the overall district technology program.

3.7 District Support Projects

This section attempted to delineate the major issues surrounding the changing of the school culture. The district proposes to support the schools efforts to create digital learning environments through the following projects:

1. Curriculum Development/Instructional Management (CD/IM) Development and Deployment.
2. Digital Education Teacher Academy program
3. HRD Leadership Development Program
4. Broward Virtual University
5. Broward Virtual Education (online school)
6. Home/School Computer Connection projects
7. Procurement of major curriculum resources and productivity tools
    a. Electronic Gradebook
    b. Internet-based integrated learning systems
    c. District wide licensing for curriculum resources
8. Procurement of end user equipment for instruction
9. CELT project addressing site level technical support
10. IT Blueprint projects related to infrastructure upgrades

4.0 Implementation of Vision: District Support

District leadership and support is essential to implement any change process. This section describes several areas in which the efforts of a united leadership focused on reaching the same shared vision is needed.

4.1 Policy Implications

As the district moves forward in a new teaching and learning environment, it becomes important to address pertinent policy issues. The presentation included in Appendix A outlines some of the related policy issues that were discussed at the Tri-County meeting, held December 15, 2003, with Broward, Dade and Palm Beach County. The collaborative effort made a first attempt at addressing common issues for integrating technology in teaching and learning. The discussion centered on teacher evaluation, student use of technology, funding issues, and sustaining a technology culture.

The district must continue to address various policy implications and appropriate changes should take place as the shared vision is adopted throughout the district.

4.2 Technology Alignment

4.2.1 Lease vs. Purchase of Hardware

To date, BCPS's procurement practice has been to purchase computer equipment (including desktops, laptops, printers, and servers) with a five-year warranty. The district's practice has been to issue competitive bids, with BCPS-specific installation and maintenance criteria. The presumption was that the computer equipment would have a useful life of five years, and would then be "refreshed" with new equipment. BCPS now has over 100,000 devices on the network. As the computer equipment is "refreshed", the older equipment is repurposed or surplused.

The costs of surplusing computer equipment includes un-installing existing software, removing documents, transporting equipment from schools and district sites, warehousing costs, and ultimately disposal costs. Additionally, repurposed equipment requires increased technical support costs to maintain.

As BCPS continues to purchase computer equipment, the costs of ongoing maintenance and disposal will increase. Many school districts have moved to leasing models of procurement, especially those implementing "one-to-one", to address the following issues:

- Continuously "refreshing" computer equipment
- Avoiding the high costs of surplusing computers
- Bundling technical support and software into the lease
- Leveraging technology dollars to procure larger volumes of computers
- Establishing fixed annualized spending
- Managing assets

In the past, BCPS did not pursue the leasing computer equipment model in which the equipment is removed after the lease period ends. The district's current practice of obtaining computer equipment does not address computer obsolescence or disposal costs. New leasing options have evolved in today's market, which can help reduce the risk of technological obsolescence and provide flexibility in IT spending. It is recommended that reviewing leasing options may be in the best interest of the district especially when identifying total cost of ownership. Leasing equipment may have the financial benefits to enable the district to move forward. Some of the flexibility is identified below:

- Some computer companies have their own financial services for leasing while others use one of the major financial institutions.
- Companies can lease not only its own equipment, but also computer equipment from any other computer company.
- A leasing company may be able to procure equipment utilizing BCPS's competitively bid RFPs.
- A lease can be written in terms of a ***"tax exempt installment sale"*** – this vehicle would allow BCPS to use capital dollars and would avoid the sales tax liability
- Leases can be written to include technical support and software, which some school districts report leads them to lower TCO.
- Leases can be written to include equipment upgrades, or additions, on a co-terminus basis with the original term of the installed asset – this means that the district can move to have all hardware and software at the same level.
- Leases can be written for equipment replacement after 3, 4, or 5 years – that is called a ***Tax-exempt Installment Sale with a Tech Refresh Amendment.***
- Staff was cautioned to carefully examine options for a "Fair Market Value Lease" because sales and property tax exemptions may not pass through to the Lessor, and under the terms of the Lease Agreement the Lessee would be responsible for the reimbursement of such charges.

Therefore, staff feels that a thorough examination of leasing options for computer equipment should be undertaken to determine what procurement model is in the best interest of the district. This study should engage the Comptroller's office and ETS staff, should focus on Total Cost of Ownership (TCO), and should be incorporated into the IT Blueprint with the CELT team.

4.2.2 IT Blueprint Connections

The Instructional Technology Planning Document outlines action steps to implement the district's long-term instructional technology vision, while the IT Blueprint will outline the operational aspects of the district's technology program that will support this instructional vision. The district has engaged outside expertise to construct an IT Blueprint with a stated goal to provide results based on industry best practices. Specifically, the IT Blueprint will address the following critical support aspects for the district's instruction technology vision:

- A comprehensive technical support program – this will address a centralized technical support functions as well as school-based technical support.
- Infrastructure capacity planning – this will address growing demands for network bandwidth, a centralized adaptive server strategy, and a network storage strategy.
- Application and web development life cycle standards – this will implement programming standards for new applicaton development and ensure that new applications will interface seamlessly into the web portal concept.
- Leasing vs Purchasing – Total Cost of Ownership (TCO) analysis will facilitate the decision-making process to select the best procurement model for technology for the district.

The IT Blueprint has a related project entitled "IT Staffing and Organization" to develop and implement a comprehensive staffing and organizational development plan for IT management/support at the school, area, and district level including the help desk function.

4.3 Curriculum Development/Instructional Management (CD/IM)

A component of the vision, the Curriculum Development/Instructional Management tool (CD/IM), is a cornerstone project. This tool will assist the district in providing teachers with digital resources and curriculum content and is necessary to help our teachers, who are the primary deliverers of instruction, and our students, who are the primary beneficiaries, to be immersed in a 21st century, world-class digital learning environment. While various web-based tools have been created to support the building of a CD/IM, the integration of the current work into one comprehensive system needs to be completed.

Since 1996, a CD/IM Toolbox for teachers has been one vision of the use of technology to support instruction. This toolbox would contain high quality curriculum content, digital resources, online professional development, an electronic gradebook, an email system and access to student achievement data. By providing a "one stop" access point for resources and services, teachers can easily interact with the CD/IM from both school and home.

The CD/IM provides a solution to the challenges users face in handling multiple technology-based tools. The CD/IM would be a web portal allowing users to access technology-based tools through a single unique login. A web site called, Webopedia http://www.webopedia.com/ defines a web portal as "a web site or service that offers a broad array of resources and services." Using their unique login, a Broward teacher using the CD/IM will have a uniform entrance to a personal web space containing a standard set of technology-based tools needed by that teacher.

The CD/IM software application is the first major procurement that would be brought forward to the Board for consideration.

4.4 Standardization of Technology-based Curriculum Resources

Standardization of curriculum resources used in Broward classrooms is not a new concept. Through the textbook adoption process, the district has already established a process for selecting the basal textbook. The equipment for the classroom is indicated on the basic equipment list. District standards for the procurement of hardware and software are also used so there is strong precedent for following the standardization process for the selection of technology-based curriculum resources. The benefits of this approach include:

- •Curriculum resources that are consistently found in all schools assist in ensuring that a student (and their achievement data) moves seamlessly from one school to another.
- A greater guarantee that all classrooms will have access to technology-based curriculum tools that support the Sunshine State Standards.
- Training, instructional planning and supporting a resource are simplified when a standard resource is used.
- Potential budgetary savings created by bulk purchasing cannot be underestimated.

Staff proposes that software standardization be addressed through the district's standards process. Software standardization aligns with the IT Blueprint.

4.4.1 Integrated Learning Systems

Integrated Learning Systems (ILS) are proprietary software packages providing curricular content as well as assessment and management options. The ILS provides each student with individualized instruction based on that student's performance on a series of activities and tests linked to standards. Many Broward schools currently use one or more Integrated Learning Systems. Major ILS companies are moving toward Internet-based models that will be independent of computer platform and will allow students to access the ILS content at home as well as at school.

Staff proposes establishing a process to standardizing on an ILS in order to provide benefits to BCPS by standardizing on training and also providing equitable access across the district for students in applicable grade levels.

4.4.2 Productivity Tools

Productivity tools include software programs such as Microsoft Office. Standardization of productivity tools is aligned with the IT Blueprint.

Staff proposes that a process to standardize on productivity tools be implemented through the standards process.

4.4.3 Curriculum Software

Curriculum software should be aligned to the six areas of technology competencies for students, and should enable technology to become an integral component or tool for

learning within the context of academic areas. Standardization of curriculum software is aligned with the IT Blueprint.

Staff proposes that a process to standardize on curriculum software be implemented through the standards process.

4.5 District Staff Development and Training

As schools transition to digital learning environments, staff development is a major cornerstone to providing the necessary knowledge, skills and abilities to teachers, administrators and technical support staff. First and foremost, teachers need to know what is expected of them and then be given the necessary staff development to enable them to be successful in the digital learning environment. The National Education Technology Standards (NETS) for Teachers define the skills teachers need and they have already adopted by both our district and the State of Florida as the benchmarks to follow.

The premise of the district staff development program is that technology enables training to occur "anytime, anyplace" on a 24/7 basis. As results-driven models indicate, staff development that includes follow-up support is the expectation of this district. Therefore, the district strategy for professional development in technology integration relies heavily on using approaches that feature:

- Mentoring for beginning and veteran teachers.
- Peer observation and coaching.
- Teacher Academies, such as the Digital Education Teacher Academy, the New Teacher Academy and district-wide summer academies, that provide ongoing courses, seminars and workshops tied to professional practice.
- Online professional development through online courses, virtual study groups or learning communities.
- Active use of video conferencing and distance learning to connect participants to each other through a virtual learning environment.
- Use of "just in time" video-based tutorials such as those offered through Atomic Learning and the creation of new video-based training to supplement the implementation of major technology projects.
- Incorporating staff development assessments and courses into the CD/IM system so that teachers can access just in time training linked to curriculum content, Sunshine State Standards and the delivery of instruction.

The goal of this strategy is to create a profession of teaching in which teachers have the opportunity to continually learn in the same virtual learning environment that we want to create for our students.

Since so many of our district departments interface with the staff development of teachers, a concerted effort must be made to insure that all district trainers and training programs make the appropriate technology connections to the learning environment.

Specific district staff development initiatives that support the integration of technology into the curriculum, such as the Digital Education Teacher Academy and the Broward Virtual University, will continue to support the staff development efforts of schools as they build digital learning environments.

4.6 Home Computer Connections

The following projects are inter-related:
- Recycling of equipment out of warranty into the homes
- **Thin Client** technology
- Negotiation of reduced rates for Internet Access
- Broadband Wireless Network with ITFS frequencies (BECON)

As technology becomes more important in the lives of our students, the "digital divide" issues become increasingly more critical. Research shows that students who have home computers perform better academically and take higher-level courses. Yet a report from the Corporation for Public Broadcasting ("Connected to the Future") suggests the digital divide has not yet closed, and may potentially widen for some children. The digital divide is an important aspect to our school district because we have recognized the importance of digital media and instructional resources. In fact, a core element of the instructional technology plan focuses on web-based instructional resources for students and their families that will be available on a 24x7 basis. Therefore, the projects in this section are positioned to address the following issues:
- Computers in homes of low-income students/families
- Home Internet access for low-income students/families
- Home access to instructional software 24x7

4.6.1 Recycling Out-of-Warranty Computers into Homes

BCPS currently has over 100,000 networked computers in the system. Many of these computers are over five years old and out-of-warranty. In the re-sale market, computers greater than five years have no re-sale value. Yet they are still usable, although they may not have enough power to run the most current applications.

Currently, BCPS follows the procedure to have schools surplus these computers to get them off their inventory. Then the district sends trucks to pick them up from the school and transport them to a warehouse. From the warehouse they are either auctioned, or the district pays for their disposal.

School districts across the country are experiencing the same dilemma, and many have adopted procedures that allow districts to surplus computers off their inventory and then make them available to parents for home use. Forsythe County, Georgia, has shared their procedures with BCPS staff. They compile a list of eligible families from surveys and teacher recommendations. Then they identify computers for surplus at schools. They take responsibility to "cleanse" the computers of any files, install a clean operating system and eligible licensed software, and also ensure that the computers are in working

condition. Twice a year, parents are selected from the list to attend a training session and to pick up the computer from the school. Forsythe reports that this procedure has been widely supported by the community and has not raised any legal issues.

Given the size of BCPS, procedures would have to be adapted to scale and the following steps would need to be covered:

- Compile and prioritize a list of families needing home computers
- Establish procedures and safeguards for schools to identify computers for "surplus"
- Establish a process to have computers cleansed and repaired
- Determine what software is licensed for home use
- Establish a training program for parents
- Schedule training and pick-up days

It is important to have the computers cleansed and repaired to ensure they are operational. If the computers can be surplused directly from schools, avoiding the transportation and warehousing costs, then it may be cost effective to have an outside agency perform this process. Alternatively, an internal team could be deployed either by additional staff, apprentices, or student interns.

It is suggested that BCPS partner with our parent groups to accomplish this goal. The PTA and DAC have expressed interest to support this goal. Parent groups can be instrumental in identifying needy families and scheduling training and pick-up nights. Furthermore, the district should partner with community groups for further facilitation, especially training and support.

Some may question how this strategy fits into the long-term district plan if the district decides to move to "one-to-one" computing. We need to remember that "one-to-one" would be implemented over a period of several years given the size of BCPS. Also, indications from schools implementing one-to-one suggests that it is most successful when students already had a computer in the home. Overall, this strategy will increase the technology quotient among our low-income families. Getting computers into low-income homes is the first step in bridging the digital divide for the entire family.

In addition to surplus BCPS computers, there is an option to recycle computers from businesses to student homes since some companies may replace their computers on a two or three year basis. It is suggested that BCPS partner with a community organization, such as Volunteer Broward, to facilitate this process.

4.6.2 Thin Client Technology

Thin client technology is a network-centric strategy in which the user's device merely serves as a display for applications running on a centralized server. The computing power is concentrated in the centralized server and not on the user's device. In this model, network connectivity is essential, however, technical support is simplified because only the server needs maintenance. This model has the advantage of easier

management of software and software licensing software is installed on the server instead of the user's computer and is available immediately to all users.

Thin client technology enables the following options in BCPS's instructional technology plan:

- Extends the useful life of computers and allows them to be re-purposed within BCPS.
- Allows students to run BCPS instructional software from their home computer (provided they have Internet access).
- Allows low-income students/families to obtain BCPS surplus computers and run BCPS instructional software (provided they have Internet access).

Thin client technology is an effective strategy when applied to the appropriate instructional environment. It is not appropriate to every situation. However, thin client technology should be factored into the district's IT Blueprint so that it can be implemented and supported where and when appropriate.

One capability of thin client computing supports "24x7" access by providing the ability for students to run BCPS licensed software from their home computers, assuming they have an Internet connection. Since the programs run on the server, even students with older model computers will be able to use instructional resources from home.

4.6.3 Negotiation of reduced rates for Internet Access

A core element of the instructional technology plan is the development of web-based instructional resources for students and their families. Therefore, secure Internet access for students from home will advance the educational mission of BCPS. This is especially important if BCPS begins to implement a "one-to-one" model. Research from other school districts shows that they have negotiated preferred rates with Internet Service Providers (ISP) for their students. The ISP provides filtered Internet access that is compliant with the Children's Internet Protection Act (CIPA) at a reduced rate, which the families pay directly to the ISP.

4.6.4 Broadband Wireless Network with ITFS Frequencies (BECON)

BCPS currently owns Federal Communications Commission (FCC) licensed wireless frequencies, which has traditionally been used for instructional television broadcast by BECON. Today the technology exists to use these wireless frequencies to build a broadband wireless network. BECON and ETS conducted a successful "proof of concept" demonstration of wireless networking. BECON has proposed building out a wireless network throughout BCPS connecting all of the schools to provide additional Intranet capacity for specific applications. If the wireless build-out is approved, then BCPS may have the capability to provide wireless connectivity to low-income homes within a range of a school.

Planning Budget to Implement New Projects

Project	Estimated Cost*	Suggested Funding Source
Digital Learning Environment Study		
Study Groups (teacher stipends for teachers NOT in test schools)	$300,000	PSTF
Test Schools – technology equipment and infrastructure	$5,000,000	ETS Capital
DETA teacher professional development for Test Schools	$175,000	Teacher Technology Staff Development Account
Evaluation for Test Schools	$30,000	Teacher Technology Staff Development Account
Total – Digital Learning Environment Study	**$5,505,000**	
Teacher Portal System (CD/IM) to include appropriate hardware	**$2,000,000**	ETS Capital
Web-based Integrated Learning Systems to include appropriate hardware	**$2,500,000**	ETS Capital
Total	**$10,005,000**	

* Additional resource costs, such as staffing, training and consulting services, must be identified to implement these projects.

Disclaimer: The estimates identified above are based on preliminary findings and will vary based on project scope of work.

Policy Implications

Integration of Technology in Teaching and Learning

Presented by:

School Board of Broward County, Florida

Student Technology Literacy

- ***No Child Left Behind*** Mandate

- "By 2006, all eighth grade students will be technology literate."
- How can districts meet "No Child Left Behind" technology literacy mandates?

Related Policy Issues

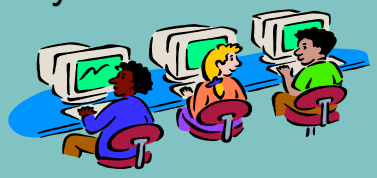
- Each district's student progression plan needs to be augmented to incorporate the NCLB mandates
- What does technology literacy mean?
  - National Education Technology Standards (NETS) for students

Related Policy Issues

- How does the district provide a **curriculum and assessment system** to measure progress based on technology standards?
- How does the district determine **adequate yearly progress**?
- How does the district interface with the school to **insure standards are being met**?

Instructional Practice

- **No Child Left Behind** Mandate
- By 2006, technology will be integrated into teaching and learning
- How can districts ensure that classroom practice meets the needs of students to acquire 21st century skills?



Teacher Technology Literacy

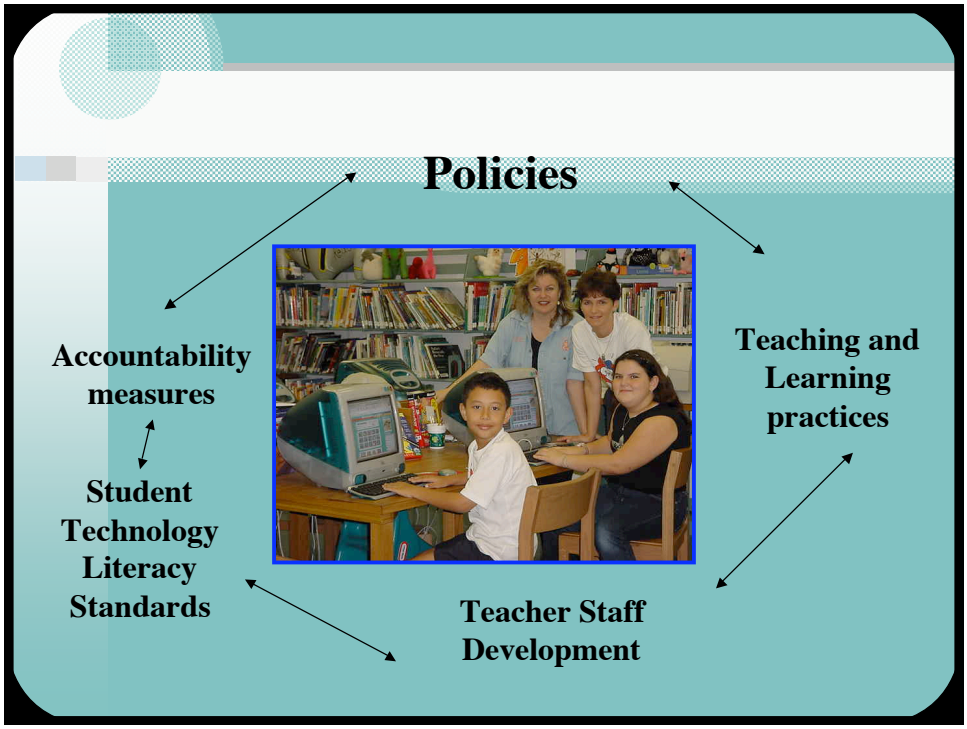
- How can we provide an **accountability system** to insure that teachers use technology provided for instructional and management purposes?
- How can districts ensure that teachers receive **adequate staff development** and capable of integrating technology into classroom practice?

Related Policy Issues

- Teacher evaluation system would need to be updated
  - Collaboration with Teacher Unions
  - Level of service required by the district in terms of staff development and technical support
  - Teacher evaluation procedure would need to be changed to include technology use for instruction

Related Policy Issues

- Incorporating language into instructional policies that insures the use of technology as a method of learning
- Incorporating accountability measures into evaluative systems for teachers and administrators
- Adjusting student progression plan to include NCLB mandates



Student Use of Technology

- How can we provide school-purchased technology directly to students for use at both home and school?
  - Laptops
  - Handheld devices
  - Internet Access to web-based school resources

Related policy issues

- Responsibility for damage, loss of equipment
- Insuring equipment will be used for school related purposes only
- Insuring only school related software will be installed on the equipment
- Insuring virus protection and scanning process upon return to school

Related policy issues

- Principal and administrative guidelines in insuring proper use of technology including:
  - Disciplinary actions for improper use
  - Financial liability (replacement/damage policy)
  - Equity guidelines

Facility (campus) use

- How can we provide our school facilities to the public beyond regular school hours?
- How can we give the public access to the technology in our facilities after school hours?

Related Policy Issues

- Funding strategies
  - Staffing needs
  - Potential revenue source
- Use of facility guidelines
  - Liabilities
  - Definitions of use
  - Ensuring public good purposes
  - Expanded instructional opportunities
  - Scheduling adaptations

Student owned equipment on campus

- Can students use their own equipment at school for instructional purposes?
- Proposed Senate Bill 184
  - "Students will no longer be in violation of the code and conduct if they possess electronic equipment in school or at school events" District to set up guidelines and adopt disciplinary measures if equipment was misused.

Related policy issues

- Functions being added to handheld computers are expanding, enabling potential instructional uses of student owned devices in schools.
  - Can students use their own equipment?
  - How can you distinguish between personal and instructional use?
  - Would not allowing these devices to be used lead to lost opportunities for students?

Sustaining Technology Culture

- How can district's insure that infrastructure upgrades and improvements occur on a regular basis and meet the ongoing needs of the districts?
  - Upgrade Network Infrastructure
  - Replace or upgrade equipment
  - Maintain Software Licenses
  - Add new teaching resources
  - *Re-occurring costs are associating with sustaining a culture of technology*

Sponsorship of employee purchase programs

- Should districts support employee purchase programs to raise the technology competency of its staff?

Related policy issues

- Should employee payroll deductions for personal purchase of technology be instituted?
- Can districts negotiate special terms for employee purchase programs?

Resource Sharing/Tri-County

- What common issues can be addressed through a Tri-County collaboration?
  - *Examples:*
  - Legislative platforms
  - CD/IM resource development
  - Electronic benchmark assessments

Related Policy Issues

- Sharing of:
  - financial resources
  - staff resources
  - technology events
- Equitable contributions
- Alignment of strategic directions
- Evaluation and continuous improvement cycle

"Life is an escalator: You can move forward or backward; you cannot remain still."

P. Russell-McCloud
Motivational Speaker

Broward County Information Technology Plan 2002-2007
Technology Goals and Objectives

MISSION STATEMENT

Implement and support technologies that provide a high quality, safe learning environment allowing all learners to achieve at their highest potential.

VISION STATEMENT

The School Board of Broward County adheres to the belief that technology should play a vital role in meeting the needs of the broad range of abilities, disabilities, cultural backgrounds, ethnic populations, and learning styles represented in district schools. To assure that technology shall play a predominant role, our mission is to provide guidance for appropriate technology utilization and integration into the curriculum, as well as infusion into school/district administration and management through the following goals and objectives.

GOALS AND OBJECTIVES

GOAL 1: All students and educators will have equitable and effective access to technology during and beyond the school day.

Objectives

1.1 Connect all classrooms to the network and provide classroom technology to meet the current district standard.

1.1.1. Identify baseline inventory of currently deployed technology at each site.

1.1.2. Conduct annual needs assessment of site-based technology.

1.1.3. Develop an upgrade implementation plan including budgetary considerations.

1.1.4. Analyze Wide Area Network (WAN) implications and develop appropriate growth strategies.

1.2 Enable easy, seamless, secure connection to the network from all access points.

1.2.1. Establish guidelines for access.

1.2.1.1. Define access points.

1.2.1.2. Define mobility within network.

1.2.1.3. Define mobile non-connected users.

1.2.2. Develop wireless standards.

1.2.3. Enhance remote access solutions.

1.2.4. Enhance security measures and procedures.

1.3 Establish and annually review technology standards.

1.3.1. Investigate new emerging technologies.

1.3.2. Review adaptive and special needs requirements.

1.4 Establish a business continuance plan to insure continued access to educational and administrative resources.

1.4.1. Engage all stakeholders.

1.4.2. List and prioritize mission critical applications and data.

1.4.3. Develop and test disaster recovery plan.

1.4.4. Develop and test contingency plans for applications / hardware / network.

1.4.5. Develop and test backup facilities (redundant).

1.4.6. Review offerings from vendors.

1.5 Create and maintain public/private (community) partnerships to enhance the effective access to technology during and beyond the school day.

1.5.1. Identify national and local partners.

1.5.2. Work with partners to develop strategies and criteria.

1.5.3. Annually reassess the effectiveness of partnership programs.

1.6 Continue to evaluate and improve the infrastructure to enhance the learning environment and accommodate growth (refresh).

1.6.1. Develop technology deployment plan.

1.6.2. Identify and apply for external funding sources.

1.6.3. Identify alternative financing.

1.6.4. Conduct formative evaluation each year to monitor implementation of District's 5-Year Technology Plan.

1.6.5. Continually improve planning process based on evaluation results.

GOAL 2: In order to enhance the impact of technology on student performance, all educators will improve mastery and integration of educational technology.

Objectives

2.1 Develop and deliver standards-based staff development.

2.1.1. Continue to conduct technology needs assessments to identify training requirements.

2.1.2. Provide technology component of educational leadership development for principals and district administrators.

2.1.3. Provide a technology training program and continuing inservice for all staff.

2.1.4. Implement technology integration training as part of mandated staff development.

2.1.5. Provide opportunities for district technology staff, vendors, and teachers to communicate about technology resources and needs.

2.1.6. Incorporate alternative delivery methods for technology staff development.

2.1.6.1. Support the use of on-line / web-based staff development to create "24 / 7" training opportunities

2.1.7. Assist in the implementation of a standards-based set of tools to increase teacher productivity.

2.2 Utilize successful schools and programs as "best practice models."

2.2.1. Designate "models" and reference their roadmap to technology integration.

2.2.2. Create a "no-barriers" school environment wherein the principal facilitates the acquisition and use of technology.

2.2.3. Provide adequate on-site support for technology integration.

2.2.4. Train a cadre of instructional specialists to support school-based technology integration.

2.2.5. Continue to align the School Improvement Plan with technology integration.

2.3 Develop partnerships for staff development opportunities.

2.3.1. Create community resource centers.

2.3.1.1. Use the resources of the Broward County Library System to merge the resources of schools and county libraries.

2.3.2. Enhance parent involvement.

2.3.3. Develop an "e-mentoring" project for Broward schools.

2.4. Ensure the district provides every opportunity for staff to improve their technical proficiency and ability to integrate the technology into the curriculum

2.4.1. Explore and implement system of rewards and incentives for exceptional achievement.

GOAL 3: Provide appropriate and timely technical support to achieve effective integration of educational technology.

Objectives

3.1. Provide full-time Instructional Technology Specialist (ITS) and Technical Support Specialist (TSS) positions at each site (State Goal 4).

3.1.1. Define roles and responsibilities for each position.

3.1.2. Develop formula to determine ratio of support staff – to – technology and end-users at each site.

3.1.3. Allocate funding for positions.

3.1.4. Develop and provide technology certification programs and continuing staff development in support of these positions.

3.1.5. Monitor, assess and modify the positions as necessary.

3.2 Utilize and continue to enhance centralized support system.

3.2.1. Strengthen district's technical support staff.

3.2.2. Establish and implement a knowledge management system.

3.2.3. Continuously improve technical support process throughout the district.

3.2.4. Utilize the Students Technology Leadership Program (STLP) throughout the district in a technical support role.

3.2.5. Monitor, assess, and modify the support system as necessary.

GOAL 4: All students will become proficient users of technology.

Objectives

4.1 Establish student technology competency standards and use to measure student fluency.

4.1.1. Review existing standards for K-12 students.

4.1.2. Research post-secondary and business technology competency requirements.

4.1.3. Adopt state and national student technology competency standards.

4.1.4. Perform periodic reviews of competency standards and modify as necessary.

4.1.5. Identify and create viable assessment and evaluation tools for use.

4.1.6. Provide assessment and evaluation tools, with training, for implementation and use by schools.

4.2 Provide students with technology literacy skills.

4.2.1. Enrich learning resource materials and make them readily available.

4.2.1.1. Computer Based Training (CBTs), district or site-based

4.2.1.2. Videos

4.2.1.3. CDs and DVDs

4.2.1.4. Internet based

4.2.1.5. Printed materials

4.2.1.6. Face to face training

4.2.1.7. BECON (Broward Education COmmunications Network)

4.2.2. Ensure the inclusion of technology skill sets in curriculum framework at appropriate grade levels.

4.2.3. Provide instruction in problem solving, decision making and research skills using technology such as use of Boolean search strategies, search engines, O/S search features, sorting and narrowing skills.

4.2.3.1. Ensure the inclusion of skill sets for life-long learning.

4.2.4. Provide students with instruction in the use of communication tools such as email, newsgroups, chat rooms and threaded discussions.

4.2.4.1. Provide access and training for instructional staff in use of these tools as teaching strategies for the delivery of curriculum and assessment of student achievement.

4.2.5. Provide students with instruction in the use of productivity/ creativity tools such as word processing, spreadsheet, database, graphics, and browsers.

4.2.5.1. Provide training for instructional staff in the use of these tools as teaching strategies for the delivery of curriculum and assessment of student achievement.

4.2.5.2. Provide training for school based technical staff in the use of these tools to assure that they can assist instructional staff when they use these tools in the classroom.

4.3. Reduce the ratio of end users to computers and ensure currency of technologies.

4.3.1. Continue to procure new hardware and software.

4.3.2. Ensure the networks provide adequate connectivity.

4.3.3. Explore new technologies that will extend the effective life of existing hardware and leverage past investments.

Mission Statement

We, the School Board of Broward County, Florida,
are committed to ensure that all students receive a quality education,
within a safe and secure learning environment

All students will achieve at their highest potential

OBJECTIVE 1
•By June 2005, all students will read by the 4th Grade and 80% of all students tested will score Level 2 and above on FCAT Reading

OBJECTIVE 2
•By August 2004, all classes, K-1, will have an average class size of 18 students; all classes 2-3 will have an average class size of 20 students to enhance the teaching and learning environment

OBJECTIVE 3
•By June 2004, all schools will receive a grade of C or better on the Florida School Performance Grade Category designations

All schools will have equitable resources

OBJECTIVE 4
•By August 2004, all students will attend a school that is safe, secure, and conducive to student health and well-being

OBJECTIVE 5
•By August 2004, reorganize and align the essential student support systems, school operations, and technology to maximize student achievement

OBJECTIVE 6
•By August 2003, every student will have a competent, qualified teacher

All operations of the school system will align with student achievement and needs

OBJECTIVE 7
•By August 2004, reorganize and align all resources from all administrative divisions, including personnel, budget, facilities, etc, to support student achievement
All stakeholders will work together to build a better school system

All stakeholders will work together to build a better school system

OBJECTIVE 8
•By Spring 2005, customer satisfaction with Broward County Public Schools will have increased to an average of 90% as measured by surveys of students, parents, teachers and community groups

OBJECTIVE 9
•By June 2001, there will be a fully developed and implemented communication infrastructure to enhance effective and positive internal and external communication

OBJECTIVE 10
•By September 2001, the district will fully implement a public engagement model to establish a constructive and collaborative relationship with parents, businesses, universities, and governmental, community-based and cultural organizations

We Value:

• Responsibility
• Honesty
• Citizenship
• Self Control
• Kindness
• Tolerance
• Respect
•Cooperation

<<BACK

Appendix E: Educational Computing Solutions for Students
Background Research

Identifying the most appropriate device to meet the diverse needs of our students is a task that the district will continuously assess moving forward. To encourage teachers to move from traditional teaching and learning to a constructivist environment will require the appropriate devices to assist in this change. In an effort to afford all students the ability to utilize digital devices on a daily basis, the district can opt to provide laptop computer carts to schools instead of classroom workstations. This will assist teachers in adapting to a one-to- one teaching model with a suitable learning curve. Students will have the ability to use the computers during the school day and workstations at home or in community centers. Re-purposing older workstations to the home will allow for this initiative to move forward. This type of change will actively involve parents and families in student's progress and engage the learning community as a whole.

Initial research findings from other school districts that have instituted one-to-one laptop initiatives shows significant gains in student achievement, particularly in writing, student collaboration and changing teaching practices. Appendix B indicates some of the major school districts that have undertaken one-to-one initiatives, their implementation strategies, and evaluative results if any.

In summation, these initiatives and the initial research and evaluation is showing the following trends:

- Portability and convenience of laptop computers is leading to improved student learning.
- Digital content and resources are provided to meet different learning goals and styles.
- Teachers are changing their teaching style from an emphasis on lecturing to using a more constructivist pedagogical approach to learning. Constructivist teaching is based on the premise that learning is more meaningful when students are actively involved in the learning process.
- Teachers are reporting greater confidence in the use of technology and feel more empowered in their classrooms.
- Access to technology improves students' writing and encourages collaboration among students.
- Students using laptops or other digital devices are more involved in their learning, explore topics on their own, revise their work more often, and work on longer, more intricate projects.
- Test score results are improving in schools with one to one initiatives.

Dr. Mark Edwards (2004), Superintendent of Henrico County Public Schools, is leading the effort to expand the power of technology to improve student learning. Henrico deployed 25,000 wireless-capable laptops to students in both high and middle schools and is in the third year of its "Teaching and Learning Initiative." Initial findings show significant gains in student achievement (Table 1.0) and a strengthened link between

family and school. School accreditation has increased to 100 percent, SAT scores are higher, and the dropout rate is the lowest ever.

Standards of Learning	2001	2002	2003
Social Studies	74	86	91
Mathematics	84	84	90
Science	85	86	93
English	90	90	95.5
Fully Accredited Regular Schools	78%	92%	100%

Table 1.0 - Increases in standardized achievement test scores and school accreditation. Henrico Co.

These gains have not been without issues. A major issue has centered on the sustainability of the funding for the programs, especially after the initial year of implementation. For example, Michigan began a state initiative to put laptop computers in the hands of all sixth grade students. Michigan expected school districts to line up to participate in the program. However, they found that many school districts were concerned that the state funding would not be available in future years and that any program started would not be sustainable after a few years.

The state of Maine's laptop program, the nation's first statewide laptop initiative, is looking financially vulnerable and a growing number of local laptop programs are running into problems. These issues highlight the reality that these initiatives are often easier to start than to sustain. Educators say the programs are also prime targets for cuts during budget crises.

Henrico County commits between four to five percent of its operating budget to technology. Most educators believe that a sustainable level of support must be undertaken by school districts if they are to be successful in these initiatives.

All the school districts agree that before embarking on a one-to-one initiative, the following advice is given:

- Develop a plan that not only launches the one-to-one initiative (digital device) but sustains it over the long term.
- Start small, go slowly and learn from others who have experienced this implementation.
- Involve your community in the program and solicit their support. Communicate with parents and the community at large about the progress of the initiative.
- Consider wireless mobile labs at each site to implement a phased approach to the one-to-one initiative.
- Provide ongoing professional development.

- Provide adequate levels of technical support and assistance with curriculum integration.

CHALLENGES

- Creating a community of technology savvy teachers and learners.
- Funding the one to one initiative.
- Identifying the appropriate devices for students.
- Improving economic development and opportunity for students and families.
- Providing Internet access in the homes of students.
- Providing insurance for laptops or digital device and looking at an affordable fee structure for this aspect.
- Mobility of students – determining what happens when a student moves from one school to another.

A potential opportunity for funding a one-to-one initiative study may come from new legislation from the Florida legislature. Senate Bill SBO116C2, in consideration now, calls for creating the Florida Teaching and Learning Technology Initiative. The purpose of this initiative is "to enhance public education through the use of technology in the classroom, including portable, wireless technology products fully configured for digital media; to motivate and assist students to achieve at high levels with the recognition that students have different learning styles; to prepare students for the 21st century workforce; and to increase parental involvement in student academic achievement." If passed, the Department of Education will administer 10 grants to school districts for the purchase of technology and services from the state partner. Grants would be three-year grants, subject to appropriation and would be initially implemented in the 2004-005 school year. Staff will closely monitor this Senate Bill.

Trotter, A. (2003). Budget crises may undercut laptop efforts. Education Week.

Edwards, M. (2004). Fulfilling the promise of Ed tech: Laptops spur learning.

Edutopia: Success Stories for Learning in the Digital Age. P.23-30.

Public Policy Institute of New York State, Inc. (2003). A laptop for every student? www.ppinys.org.

Appendix F: Single Site Composite Cost Analysis
Digital Learning Environment Study
(Based on quantities associated with a model deployment at a typical High School)

	Cost per item	Quantity	Extended Cost
Infrastructure Wireless Upgrade	$118,000	1	$118,000
Enterprise Wireless Network Extension: Portables	$3,193	19	$60,667
Classroom Presentation Upgrade	$950	90	$85,500
Teacher Laptops*	$1,000	67	$67,000
Student Laptops	$1,000	2607	$2,607,000
Staff Development (DETA)	$700	140	$98,000
Evaluation	$15,000	1	$15,000
TOTAL PROJECTED MODEL COST			**$3,051,167**

*Teacher laptop count calculated with assumption that 50% of all teachers already have Laptops meeting minimum District Standard.

Single Site Composite Cost Analysis
Digital Learning Environment Study
Based on quantities with a model deployment at a High School that has a wireless overlay and laptops instead of desktops

	Cost per item	Quantity	Extended Cost
Infrastructure Wireless Upgrade	$0	1	$0
Enterprise Wireless Network Extension: Portables		0	$0
Classroom Presentation Upgrade	$950	60	$57,000
Teacher Laptops*	$1,000	20	$20,000
Student Laptops	$1,000	852	$852,000
Staff Development (DETA)	$700	80	$56,000
Evaluation	$15,000	1	$15,000
TOTAL PROJECTED MODEL COST			**$1,000,000**

*Teacher laptop count calculated with assumption that there will be 20 new teachers at Monarch in the 04-05 school year.

Note: Technical support will be addressed in the CELT IT Blueprint.