

South Orange Maplewood School District

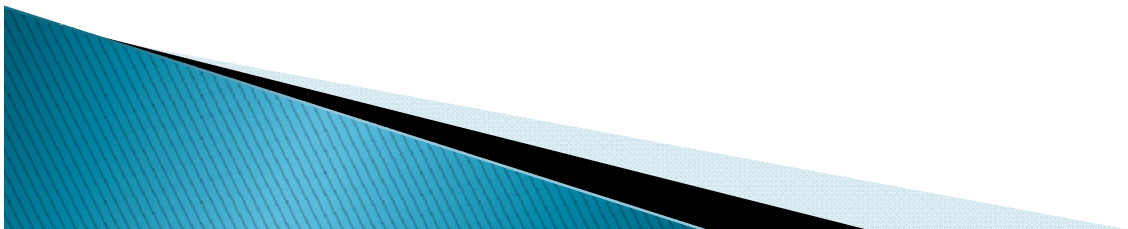
Technology Report

“The principle goal of education is to create men and woman who are capable of doing new things, not simply repeating what other generations have done” Jean Piaget

Objectives

- ▶ History of Technology and Education
- ▶ Review National, State, and Local Goals and objectives
- ▶ Overview of the Technology Department
- ▶ Technology: Essential Elements
- ▶ Review areas identified for improvement
 - Technology Budget Requests
- ▶ Moving Forward
 - Progress Toward The Technology Plan and Financial Data
- ▶ Best Practices
- ▶ References

History of Technology in New Jersey Education

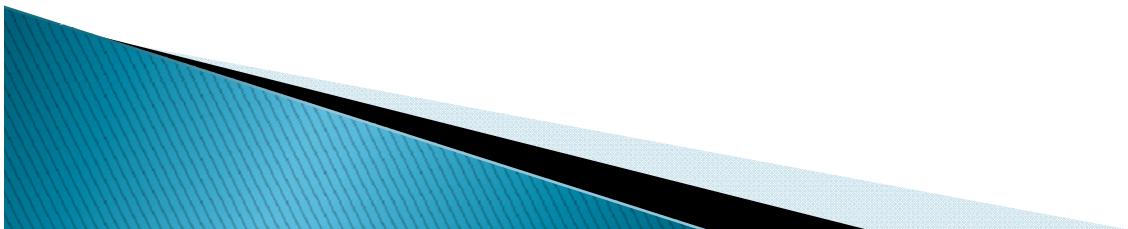


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History of Technology and Education in New Jersey

- ▶ 1990's schools begin to rigorously infuse technology into the educational system
- ▶ May 1997 New Jersey adopts "School Facility Technology Standards"
- ▶ 2001 Schools required to submit technology plans
- ▶ Spring 2002 New Jersey adopts the "Technology Core Curriculum Content Standards"

Technology Goals



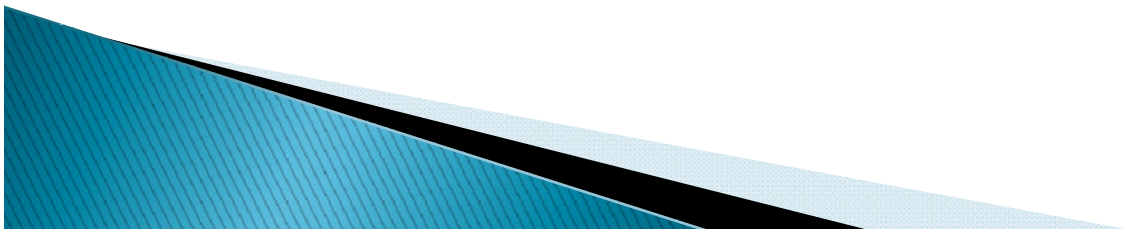
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National Technology Goals

- ▶ Goal 1: All students and teachers will have access to information technology in their classrooms, schools, communities and homes.
- ▶ Goal 2: All teachers will use technology effectively to help students achieve high academic standards.
- ▶ Goal 3: All students will have technology and information literacy skills.
- ▶ Goal 4: Research and evaluation will improve the next generation of technology applications for teaching and learning.
- ▶ Goal 5: Digital content and networked applications will transform teaching and learning.

New Jersey DOE Technology Vision

All students will be prepared to meet the challenge of a dynamic global society in which they participate, contribute, achieve, and flourish through universal access to people, information and ideas.



New Jersey DOE Technology Goals

- ▶ Goal 1: All students will be prepared to excel in the community, work place and in our global society using 21st century skills.
- ▶ GOAL 2: All educators, including administrators, will attain the 21st century skills and knowledge necessary to effectively integrate educational technology in order to enable students to achieve the goals of the core curriculum content standards and experience success in a global society.
- ▶ GOAL 3: Educational technology will be accessible by students, teachers and administrators and utilized for instructional and administrative purposes in all learning environments, including classrooms, library media centers, and other educational settings such as community centers and libraries.
- ▶ GOAL 4: New Jersey school districts will establish and maintain the technology infrastructure necessary for all students, administrators and staff to safely access digital information on demand and to communicate virtually.

South Orange–Maplewood School District Technology Goals

I. Information Literacy

Students will:

- ▶ Access information efficiently and effectively
- ▶ Evaluate information critically and competently
- ▶ Use information accurately and creatively

South Orange–Maplewood School District Technology Goals

II. Technological Literacy

Students will:

- ▶ Choose the appropriate technology tools and applications
- ▶ Demonstrate proficiency in using technology to:
 - Solve problems
 - Interact with multiple audiences
 - Express creativity
 - Make informed decisions

ISTE –International Society for Technology in Education

- ▶ **Creativity and Innovation** Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
- ▶ **Communication and Collaboration** Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

ISTE –International society for Technology in Education

- ▶ **Research and Information Fluency** Students apply digital tools to gather, evaluate, and use information.
- ▶ **Critical Thinking, Problem Solving, and Decision Making** Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

ISTE –International society for Technology in Education

- ▶ **Digital Citizenship** Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
- ▶ **Technology Operations and Concepts** Students demonstrate a sound understanding of technology concepts, systems, and operations.

NJCCCS for Technology

- ▶ Standard 8.1, Educational Technology, is aligned to the International Society for Technology in Education (ISTE) standards and the Partnership for the 21st Century Skills framework.
- ▶ Standard 8.2, formerly Technology Education, is renamed Technology Education, Engineering, and Design and is aligned with the goals of the International Technology Education Association (ITEA) and the Partnership for 21st Century Skills framework.

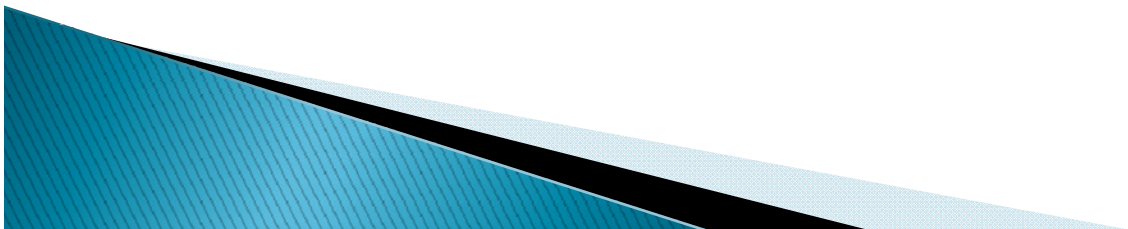
NJCCCS for Technology

- ▶ **8.1 Educational Technology:** All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.
- ▶ **8.2 Technology Education, Engineering, and Design:** All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.

Students need to develop the following skills to compete in an ever changing world

- ▶ Learning and innovation skills
 - Critical thinking and problem solving
 - Communication and collaboration
 - Creativity and innovation
- ▶ Information and media literacy skills
 - Information Literacy
 - Media Literacy
 - Intersection of Information, Communication, and Technology (ICT) Literacy

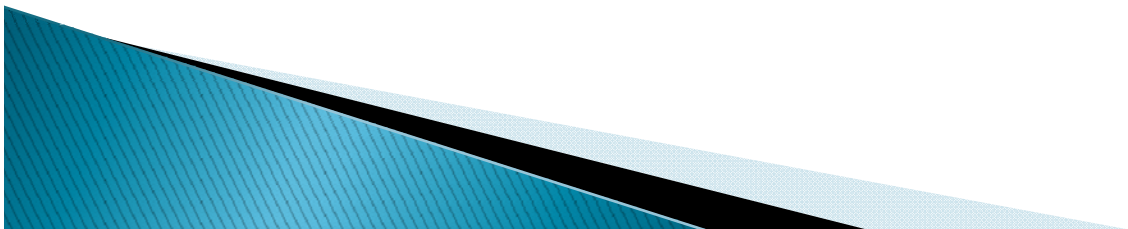
Technology Department Overview



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What Makes the Technology Department Different?

- ▶ The technology department supports all student and administrative functions
- ▶ Technology is rapidly changing and therefore requires frequent upgrades and replacement



What technology is available in The South Orange–Maplewood School District?

- ▶ 1 computer lab in each elementary school
- ▶ Each library is automated
- ▶ 2 computer labs in each middle school
- ▶ Math lab in CHS
- ▶ Language Arts lab in CHS
- ▶ Social Studies lab in CHS
- ▶ Science lab in CHS
- ▶ World Language lab in CHS
- ▶ Journalism lab in CHS

What technology is available in The South Orange-Maplewood School District?

- ▶ 2 Business labs in CHS
- ▶ CAD lab in CHS
- ▶ Graphic Arts lab in CHS
- ▶ Photography lab in CHS
- ▶ Library lab in CHS
- ▶ TV Studio in CHS
- ▶ TV Editing lab in CHS
- ▶ Music lab in CHS
- ▶ Thin client / computer in every classroom

The Technology Department Supports the following:

- ▶ Student Information System
- ▶ Library System
- ▶ Special Services System
- ▶ Finance system
- ▶ Human Resource System
- ▶ Transportation system
- ▶ Emergency Notification System
- ▶ Website
- ▶ E-mail system

The Technology Department Supports the following:

- ▶ File Storage Systems
- ▶ Point of Sales System
- ▶ Sound Field systems in some classrooms
- ▶ 13 local area networks
- ▶ Wide Area Network
- ▶ Internet Service
- ▶ Card Access System
- ▶ Video Surveillance System
- ▶ Telephone system

The Technology Department Supports the following:

- ▶ Work Order System
- ▶ Intercom Systems
- ▶ 3 Read180 classrooms. 1 in each of our secondary schools.
- ▶ Classroom smart boards (5th grade classrooms)
- ▶ Wireless LAN access in all buildings beginning in the 2010–2011 school year.
- ▶ Testing and assessment (DRA, NJASK, HSPA, NJPASS, CRT, etc.)
- ▶ Provide support for 7,000 people daily

Technical Support

- ▶ A Network Administrator, Telephone/AV Specialists, 2 Technicians
 - Maintain network switches and routers
 - Maintain file and application servers
 - Provide day to day technical support to keep all systems in good working order
 - Maintain network user accounts
 - Install and configure systems
 - Replace and upgrade systems

Technology Professional Development

- ▶ Three Technology Integration Trainers
 - Introduce new hardware and software to teachers
 - Train staff on how to ...
 - Access network applications
 - Use software applications
 - How to use technology for instruction
 - Help teachers locate internet resources to support teaching and learning
 - Help teachers develop technology infused lessons

Technology Curriculum

▶ K–8 Core Requirements

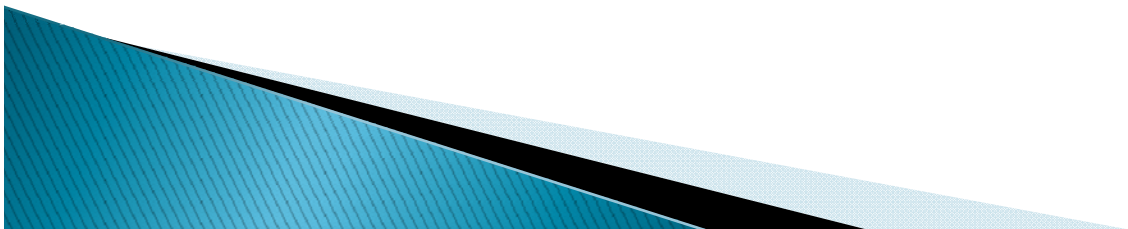
- Core Technology skills are taught by the Media Specialists.
- Teachers may elect to use the school's lab for targeted technology projects.
- Students technology proficiency is assessed at the end of the 8th grade.
- Computer lab programs but little or no student dedicated access to technology in classrooms

Current Technology Curriculum

▶ 9–12

- Students may sign-up for a variety of electives that use technology to deliver curriculum (Graphic Arts, CAD, TV Production / Editing, etc.)
- Each department has a dedicated lab that teachers may elect to use for targeted technology projects.
- Computer lab programs but little or no student dedicated access to technology in classrooms.

Technology: Essential Elements



Essential Elements for Technology

Technology Implementation

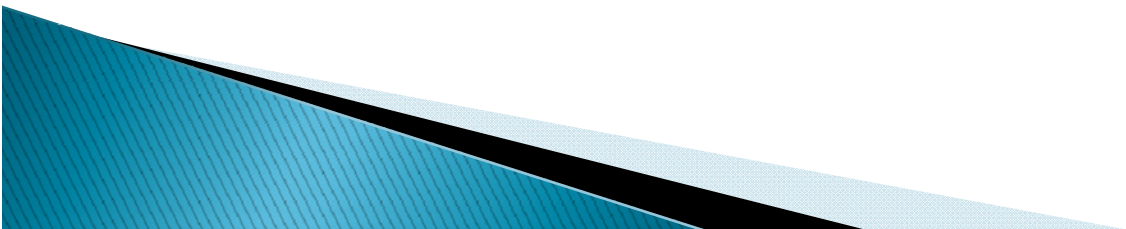
- Technical support
- Infrastructure
- Professional development
- End user equipment and software
- Assessment

What tools do we use to assess the essential elements of technology?

- ▶ Technical Support
 - Work order system
- ▶ Infrastructure
 - Network bandwidth monitoring
- ▶ Professional Development
 - Requests from staff
 - Monitoring the use of technology tools
- ▶ End user tools
 - Discussions and requests from the community (Teachers, Students, Supervisors, Principals, Administrators, Parents)
 - Research (ISTE, 21stcenturyskills, Workshops, Etc.)
 - Student technology proficiency assessment
 - Teacher technology survey
 - Work orders

Technology Areas Identified for Improvement

Technology Budget Requests



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Areas identified for improvement are...

- ▶ Technology integration in the classroom
 - Purchase laptops for student use
 - 25 for each elementary school
 - 50 for each middle school
 - 25 for the high school
 - Install smart boards for 4th grade classrooms

Areas identified for improvement are...

- ▶ Network Infrastructure (Wireless, WAN, Internet)
 - Install new WAN 1 gbps, Internet circuit 100Mbps
- ▶ New Middle School Technology Labs
 - Desktop Computers
 - Smart board
 - Printers /Plotter
 - Cameras

Areas identified for improvement are...

- ▶ Health / Nurses Office
 - Audiometers
 - SNAP (Student health information system)
- ▶ Language Arts
 - 9 Smart boards
 - Read180 software maintenance
- ▶ Math
 - 4 Tablets
 - 4 Document cameras
 - 8 LCD projectors

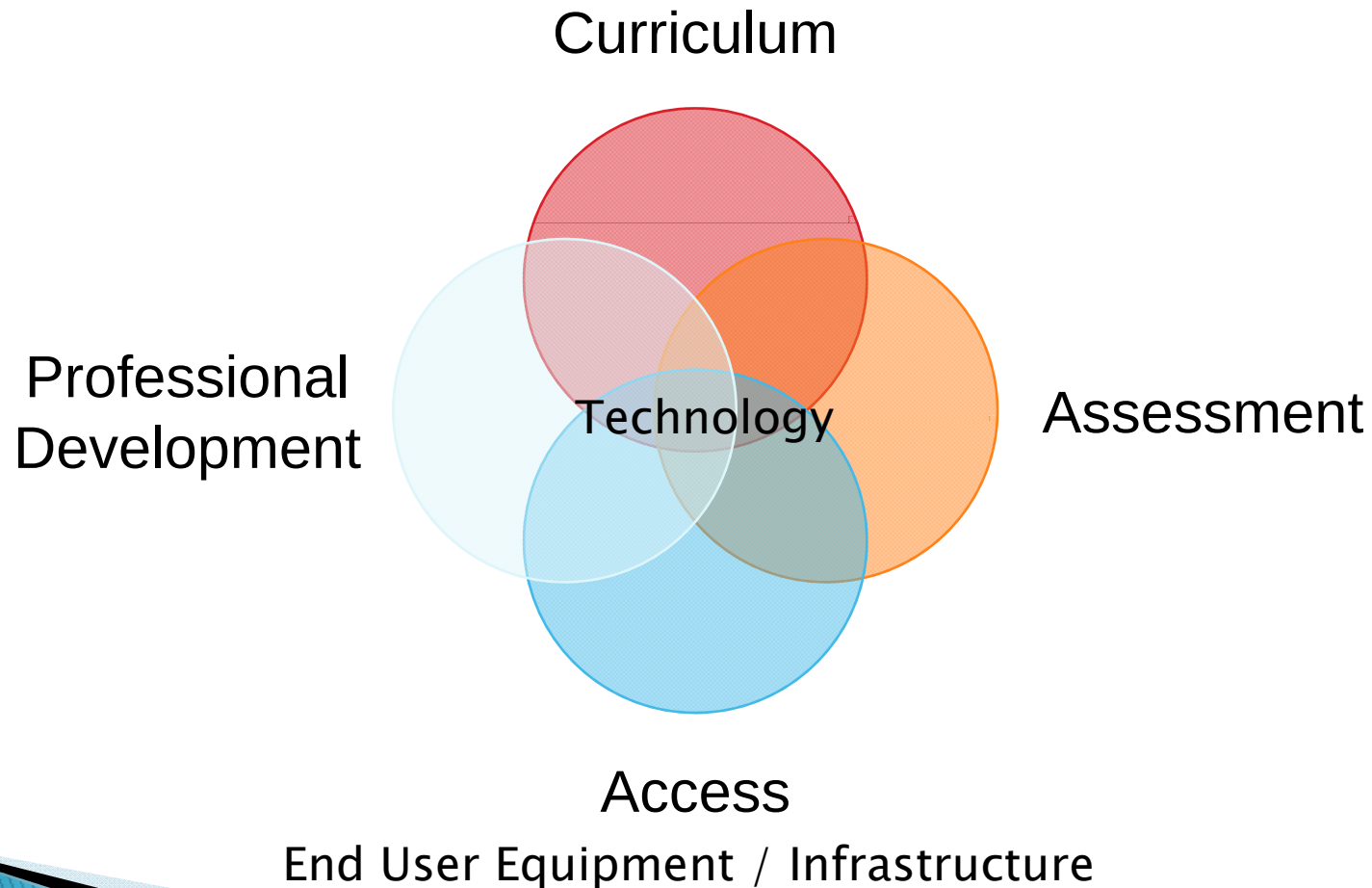
Areas identified for improvement are...

- ▶ Music / Art
 - 7 laptops for teachers
 - 8 Smart boards
 - Smart Music software for the music curriculum
- ▶ Social Studies
 - 20 Smart boards (4–6th grade transition, 10–6th grade classrooms, 6–high school classrooms)
- ▶ World Languages
 - 30 IPODS
 - 11 LCD projectors

Areas identified for improvement are...

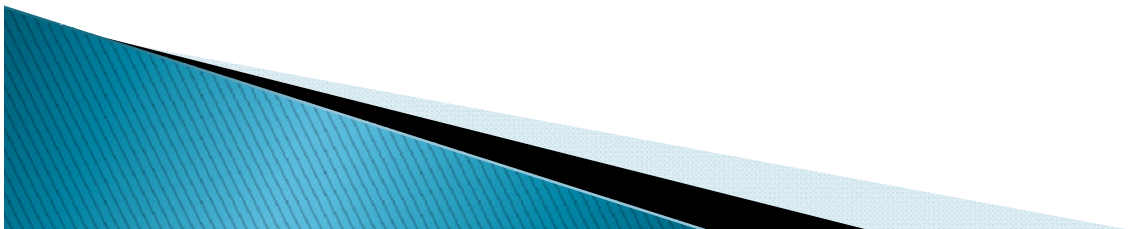
- ▶ Science
 - Upgrade equipment in CHS science lab
- ▶ Security
 - Replace DVR's
- ▶ Central File Servers
 - Replace aging server equipment

Moving Forward Long Range Tech Plan



Key

- ▶ BLACK – Proposed in the Technology Plan
- ▶ RED – Purchased / Installed
- ▶ Green – Proposed for next school year



Moving Forward Technology Assessment

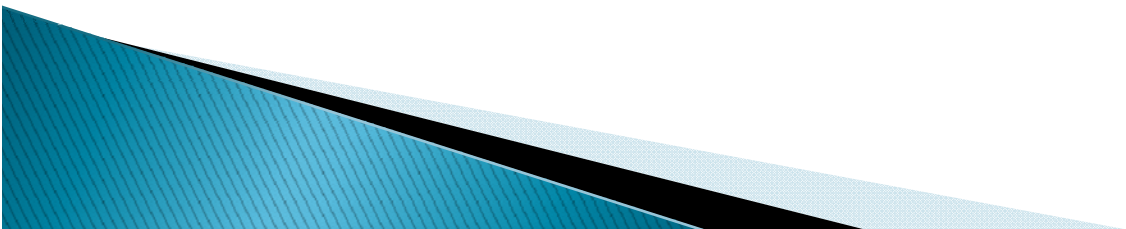
- ▶ Measurement of how technology is being used by students and educators
 - There is no proven way to measure how resources impact test scores, but we can measure the way resources are used.
- ▶ Instructional Technology Assessment Methods
 - LoTI
 - Technology Hierarchy
 - EnGauge
 - (Researching – In Progress)

Moving Forward Technical Support

As end-user equipment and services increase the demand for technical support will increase. The following options will be considered as the need for additional technical support grows.

- This is a perfect opportunity to provide real world experiences for our students while meeting the increasing demand for technical support.
- We may leverage additional vendors services
- Hire additional staff

We are not requesting additional staff this year



Moving Forward Infrastructure

- ▶ Upgrade network electronics and install wireless access.
 - Handle increasing network demands as end user equipment increases and electronic content becomes more widely used (Streaming Video, Electronic books, E-mail, Wiki's, Blogs, etc.)
 - Support wireless devices (Laptops, Handhelds, I-Pods, Java enabled devices, WiFi phones etc.)
- ▶ (In Progress – Will be completed June 2010)

Moving Forward Infrastructure

Expand file storage services

- ▶ More and more students are expected to produce work in an electronic format. The district lacks central storage to support these functions. These resources should be accessible from inside and outside the school district. Furthermore, staff does not have adequate space for document and email storage.
- ▶ **Purchased additional storage. Will be installed this year.** Will need to do more moving forward.

Moving Forward

Access – End User Equipment

Maintenance

- ▶ Adopt a policy for the routine maintenance and replacement of aging systems (5 year replacement schedule).
- ▶ This year we replaced: Elementary school computer lab equipment, CHS social studies lab, Middle school computer lab equipment, CHS CAD lab, rewired the TV studio, re-wired the TV broadcast rack.
- ▶ Planning to replace aging equipment as follows:
 - File server equipment
 - Security Equipment
 - CHS Science Lab

Moving Forward

Access – End User Equipment

Upgrades For All Classrooms Will Include:

- ▶ Installation of a projector, smart board, DVR, sound amplification system, and computer.
- ▶ Continuing to support a listening stations and/or iPod's.
- ▶ Installed smart boards in 5th grade classrooms, libraries, tech training labs.
- ▶ Planning on installing smart boards in 4th grade classrooms and areas in our secondary schools as requested by our supervisors.

Moving Forward

Access – End User Equipment

Shared Elementary School Resources

- ▶ Purchase a 25 station laptop computer cart for each elementary school. Teachers can bring this resource into the classroom for projects requiring technology integration.
- ▶ Purchase digital cameras and video cameras. The resources can be shared for the production of multi-media projects.
- ▶ Planning to purchase a 25 station laptop cart for each elementary school.

Moving Forward

Access – End User Equipment

Shared Middle School Resources

- ▶ Purchase three 25 station laptop computer cart complete with printer for each grade level in the middle school. Teachers can bring this resource into the classroom for projects requiring technology integration.
- ▶ Purchase digital cameras and video cameras. The resources can be shared for the production of multi-media projects.
- ▶ Planning on purchasing a 25 station laptop cart for each middle school.

Moving Forward

Access – End User Equipment

Shared High School Resources

- ▶ Scheduling and mobility reduce the effectiveness and practicality of mobile laptop carts. The library and department computer labs will become a key area for student technology.
- ▶ Purchase digital cameras and video cameras. The resources can be shared for the production of multi-media projects.
- ▶ Planning on purchasing a 25 station laptop cart for the high school library.

Moving Forward

Access – End User Equipment

All Libraries

- ▶ Replace all thin clients with desktops computers.
- ▶ Every library will have a projector, smart board, amplification system, and DVD/DVR unit, scanner, and document camera installed.
- ▶ An additional 25 laptops will be available for group student instruction. They can also be assigned to students temporarily for special projects and research.
- ▶ Planning on purchasing a 25 station laptop cart for each middle school library.

Moving Forward

Access – End User Equipment

Middle School Library Lab

- ▶ Maintain the amount of available equipment in the lab to contain 25 desktop computers, a smart board, video projector, DVD/DVR unit, amplification system, scanner, and document camera.

Moving Forward

Access – End User Equipment

High School Library Lab

- ▶ Maintain the amount of available equipment in the lab to contain 25 desktop computers, a smart board, video projector, DVD/DVR unit, amplification system, scanner, and document camera.
- ▶ Installed smart board equipment in the high school library

Moving Forward

Access – End User Equipment

New Middle School Technology Labs

- ▶ Install a new technology lab to contain 25 desktop computers, a smart board, video projector, DVD/DVR unit, amplification system, scanner, and document camera. A teacher will be hired for full time instruction and all students should cycle through a technology class. The class will focus on delivering technology core content curriculum.
- ▶ Planning on purchasing new equipment for the new middle school technology labs.

Moving Forward

Access – End User Equipment

Middle School computer Labs

- ▶ Maintain existing computer lab to contain 25 desktop computers, a smart board, video projector, DVD/DVR unit, amplification system, scanner, and document camera.
- ▶ Replaced aging equipment in each middle school computer lab.

Moving Forward

Access – End User Equipment

New High School Writing Lab

- ▶ Install 25 desktop computers, smart board, document camera, video projector, DVD/DVR unit, amplification system to support the new Language Arts curriculum.
- ▶ Installed a new writing lab in CHS

Moving Forward

Access – End User Equipment

Read180 Classrooms

- ▶ Install 7 desktop computers and a printer in each Read180 classroom. There will be one classroom in each middle school and the high school.
- ▶ Installed a Read180 room in each secondary school.

Moving Forward

Access – End User Equipment

DRA Assessment

- ▶ Purchase software and handheld devices to support early reading electronic assessments. One handheld per teacher K–2 was purchased in 2008–2009. Additional handhelds will be purchased for teachers in grades 3–5.
- ▶ Purchased DRA assessment equipment for grades K–2.

Specifically, the estimated cost of the technology plan is ...

- ▶ Equipment inventory valued at \$5.5 million dollars.
- ▶ A five year replace plan equates to \$1.6 million a year to replace aging equipment.
- ▶ \$1 million per year is required to purchase supplies and cover annual services (internet connections, WAN, software maintenance, repairs, etc.)
- ▶ \$2.6 million annually
- ▶ A ratio of 3 students per computer
- ▶ A cost of \$1,300 per computer (2,000 computers)
- ▶ A cost of \$400 per student (6,400 students)

* Numbers are rounded

How much is the proposed technology budget?

- ▶ \$811,000 in new equipment
 - Student laptops
 - New middle school technology lab equipment
 - Technology equipment requested by supervisors
 - Student medical information system
- ▶ \$983,000 for contracts and repairs
 - Includes costs for new WAN / Internet services
- ▶ \$141,000 replacing aging equipment
 - Delayed the replacement of equipment and re-allocated it towards the purchase of additional equipment.
- ▶ \$1,935,000 total technology budget

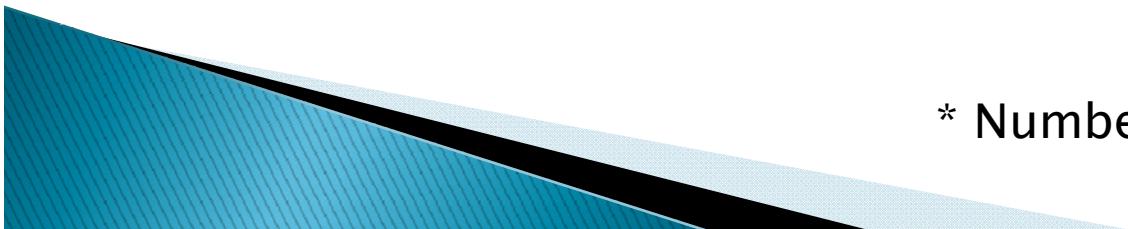
* Numbers are rounded

How much will it cost to maintain technology if the budget is approved as presented?

- ▶ \$1.9 million annually
- ▶ A ratio of 4 students per computer
- ▶ A cost of \$1,100 per computer (1,750 computers)
- ▶ A cost of \$300 per student (6,400 students)
- ▶ Less than 2% of the annual budget

* Numbers are rounded

12/21/2009



How do these numbers compare to research?

- ▶ Research shows school districts spend \$300 to \$500 per student for technology. Currently our enrollment is approximately 6,400 students. It is expected our technology plan should cost \$1,920,000 to \$3,200,000 annually.

* Numbers are rounded

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Best Practices

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Moving Forward Curriculum – Why Technology?

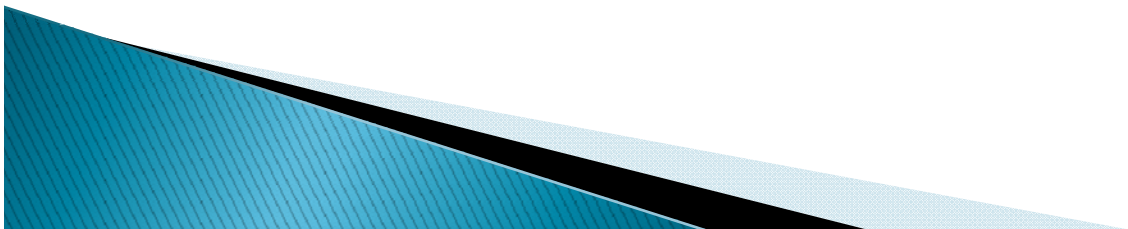
“It is now possible for more people than ever to collaborate and compete in real time with more other people on more different kinds of work from more different corners of the planet and on a more equal footing than at any previous time in the history of the world— using computers, e-mail, fiber-optic networks, teleconferencing, and dynamic new software.”

Thomas Friedman

Moving Forward

Curriculum – Why Technology?

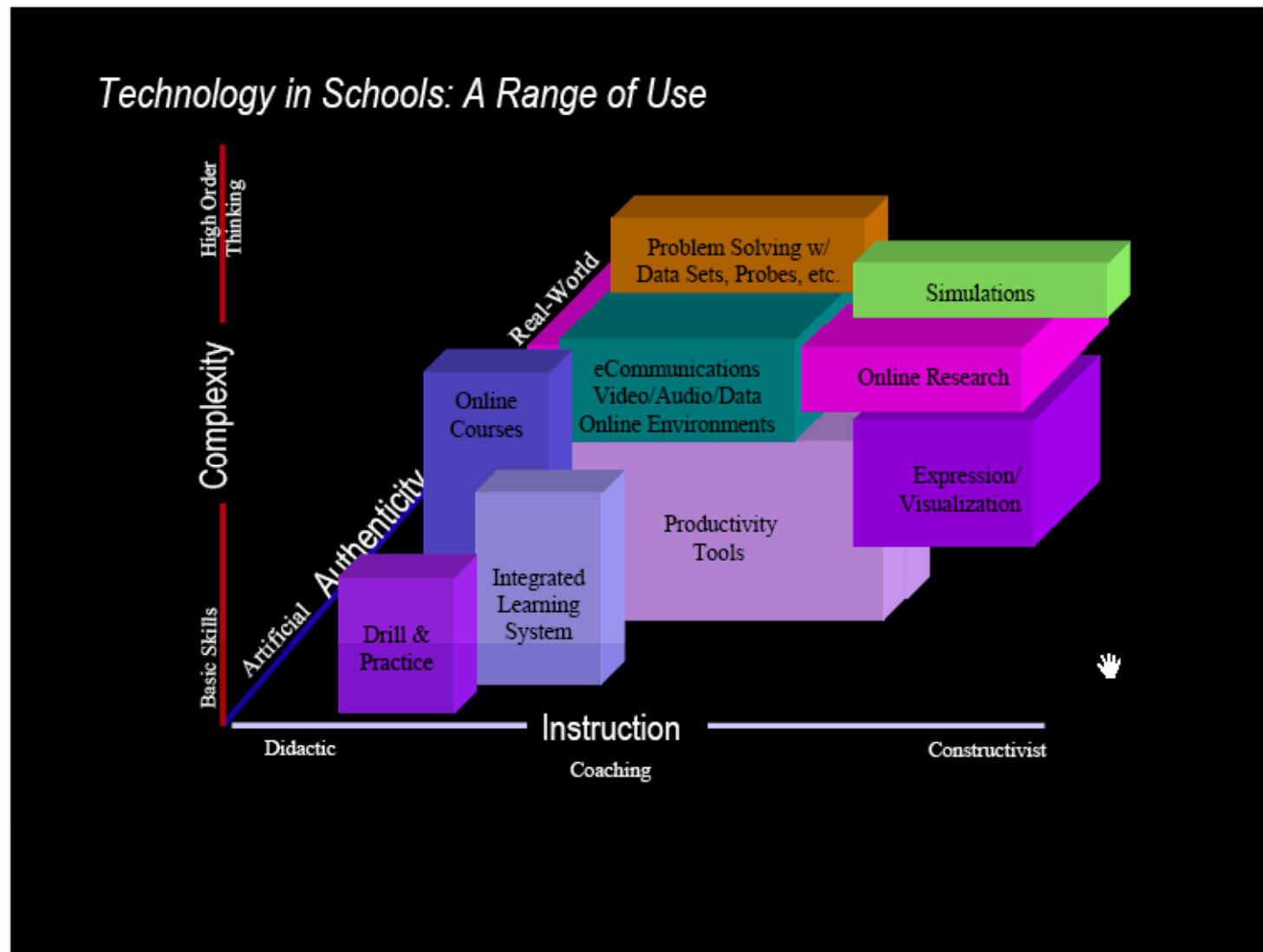
- ▶ People have the ability to push and pull information from anywhere.
- ▶ Giving so many people access to tools of collaboration combined with the ability to search, ensures innovation can come from anywhere on the planet.
- ▶ The achievers will be the ones who learn these habits, processes, and skills.



The appropriate use of technology in teaching and learning...

- ▶ Enables people to people exchanges (email, video conferencing)
- ▶ Enables rapid data collection
- ▶ Enables problem solving searches (compare gathered data, compare information from different resources)
- ▶ Think of the internet as a distribution system for information

Technology / Curriculum Integration

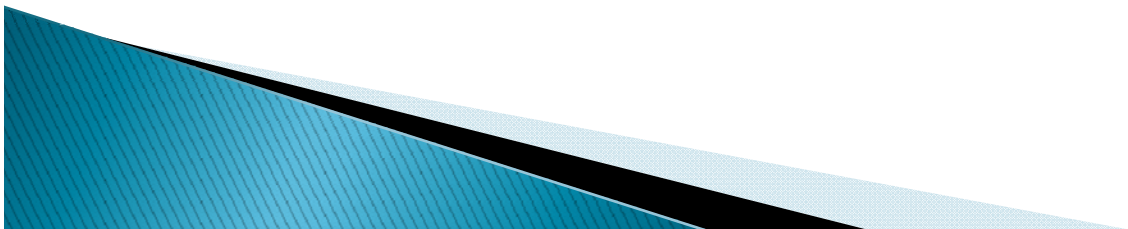


Moving Forward

Professional Development

- ▶ Professional development is CRITICAL in creating systemic change.
- ▶ Continue to offer workshops to teach
 - How to use various devices and software applications
 - How to effectively integrate and use the tools of technology to enhance teaching and learning
- ▶ The power of professional development grows when curriculum and technology are taught in combination with one another.
 - Merging curriculum and technology into one integrated package, empowers teachers to become technology leaders!

References



References

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- ▶ <http://www.21stcenturyskills.org/>
- ▶ <http://www.nj.gov/education/techno/>
- ▶ <http://www.nj.gov/education/cccs/2009/final.htm>