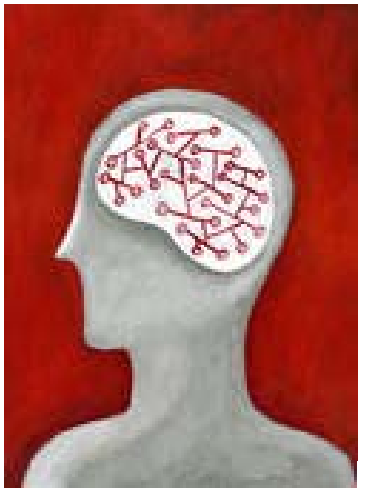
QUOTES



- ***Just do it!*** Digital Natives

- “Different kinds of experiences lead to different brain structure.” Dr. Bruce Perry

- Our greatest fear is that at this moment, despite our very best efforts, we are doing a terrific job of preparing our children for year 1960 and we may be being optimistic in saying that.

QUOTES

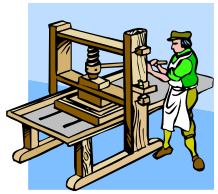
- *Alex Toffler* in Power Shift said, “Whoever controls information will have the power to lead the world.”
- Information changes every 11 seconds

- T T W W A D I
- Different kinds of experiences lead to different brain structures – *Dr. Bruce Perry*

QUOTES

- You learn at your best when you have something you care about and can get pleasure in being engaged in. – *Howard Gardner*

- Before internet – two most important developments from an educational perception were the invention of the printing press and creation of the university system.



QUOTES

- Our students have changed radically. Today's students are no longer the people our educational system was designed to teach.

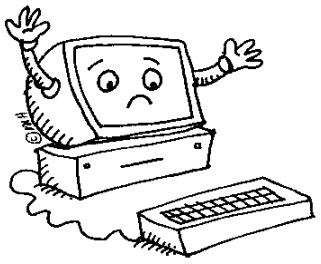
Thinking in the Future Tense

Jennifer James

- "We are all confused and ambivalent, trying to get our bearings in an age of such rapid change. We are experiencing Epic Shift in the way we think and feel about ourselves and our jobs, about the way we live, and about the future itself.

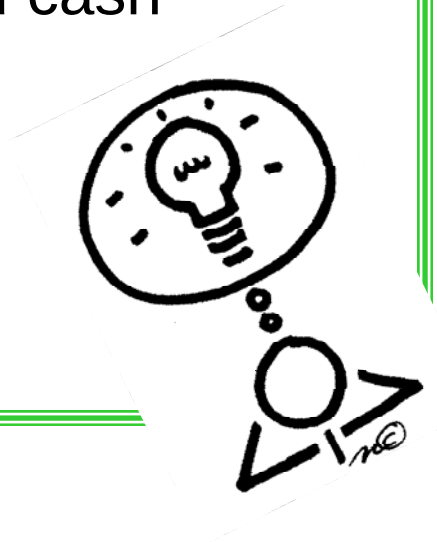
- Cyber age, a new culture of systems and connections.

- Cybors (Cybernetic organisms) half man – half machine hybrids whose physical tolerances and skills extend beyond previous human limitations.



- Children are highly accomplished Cyborgs – Computer, they don’t read instructions. They make intuitive connections, grab the keypad, joystick and take off.

- Chips and imagination are creating smart offices, smart houses, smart cars, smart telephones. Need computers to get access to libraries (no card files), voice mail, electronic mail, gas pumps, and automated cash machines.



Other Examples:

- Voice print, fingerprint – open doors

- Cars – unlock, lock, start
- Cars drive themselves – experiment in Germany's auto bahns.
- Computers will triple writing speed operated by voice activation technology.
- Bodies reconstructed by total prosthesis – except for brain.
- Future jobs -- 80 % Cerebral
  20 % Manual

The

is to

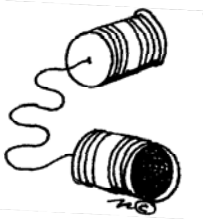
“Think in the Future Tense”

Perspective	Seeing with new eyes
Pattern Recognition	Recognizing the future
Cultural Knowledge	Harnessing the Power of Myths and Symbols
Flexibility	Speeding up your response time
Vision	Understanding the past to know the future
Energy	Doing more with more or less
Intelligence	Mastery of new forms of intelligence
Global Values	Profiting from diversity

53 Trends Now Shaping the Future

Marvin Cetron

- The growth of the information industries is creating a knowledge–dependent global society.
- Telecommuting is a growing knowledge-age phenomenon.
- 80% of companies worldwide now are estimated to have employees who work from home.
- For a good career in any field, computer competence is mandatory.



Technology increasingly dominates both the economy and society:

- Robots are taking over more jobs.
- Wireless connections simplify relocation of personnel; minimize delays.
- By 2010 – Artificial Intelligence (AI), data mining, and virtual reality will help companies to assimilate data and solve problems. AI applications include: robotics, machine vision, voice recognition, speech synthesis, electronic data processing, health and human services.

This will require higher level of education and training. We must get used to the idea of lifelong training.

Growing Up Digital

Don Tapscott

- **With their fingertips they can traverse the world**
- **They have new tools for inquiry, analysis, self-expression, influence and play**
- **They have unprecedented mobility**

- **2/3 have personal computers**
- **Net Generation refers to generation of children between the ages of 2 and 30.**

Children of the Digital Age

- **Broadcast Learning – Approach to learning where an expert who has information transmits or broadcasts it to the student.**

- **Lecture, textbooks, homework assignments are all analogies for the broadcast media: one way – centralized.**

- **Foundations of authoritarian, top-down teacher-centered.**

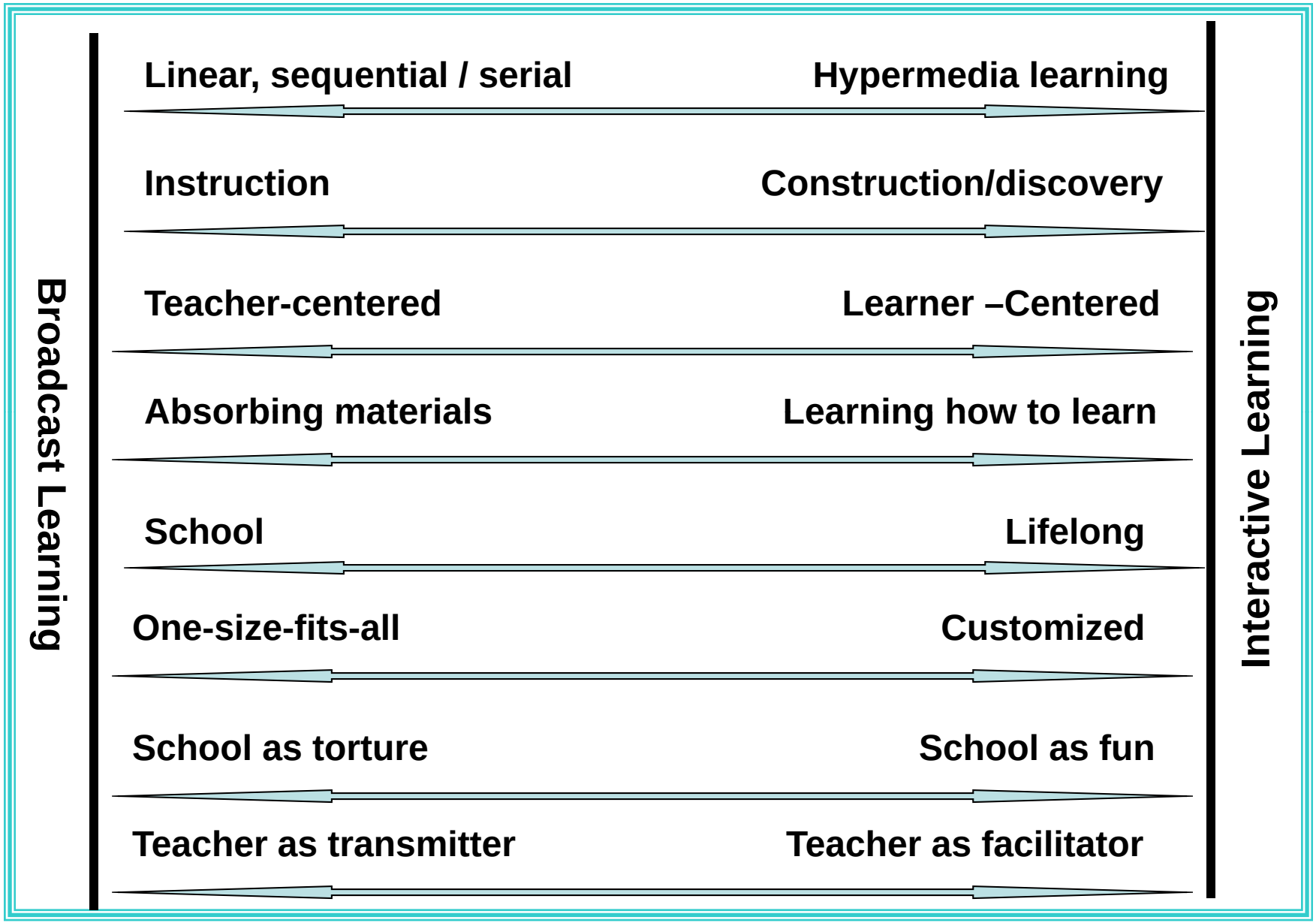
- **Teacher is primarily a transmitter.**

Children of the Digital Age

- **Curricula are designed by experts who know the best sequencing of material and how children learn a subject.**

- **Programs are not customized to each student but rather designed to meet the needs of a grade – one size fits all.**

- **Paradigm Shift – from Broadcast Learning to Interactive Learning.**


Broadcast Learning
Linear, sequential / serial
Hypermedia learning
Instruction
Construction/discovery
Teacher-centered
Learner –Centered
Absorbing materials
Learning how to learn
School
Lifelong
One-size-fits-all
Customized
School as torture
School as fun
Teacher as transmitter
Teacher as facilitator
Interactive Learning

ARE YOU

A DIGITAL NATIVE

OR

A DIGITAL IMMIGRANT?

Mark Prensky

- **Today's students (K-16) first generation to grow up with new technology.**

- **Surrounded by and using: computers, videogames, digital music, video cams, cell phones, and all the other toys and tools of the digital age.**

- **Today's average college grads have spent less than 5,000 hours reading, but over 10,000 hours playing video games (not to mention 20,000 hours watching TV.**

- **Computer games, email, internet, cell phones and instant messaging are integral parts of their lives.**

- **Students of today are called – N-Gen or D-gen or Digital Natives**

The rest of us are digital immigrants.

DIGITAL IMMIGRANTS

- Can be seen in such things as turning to the internet for information second rather than first.
- Reading the manual for a program rather than assuring that the program itself will teach us how to use it.
- Printing out e-mail.

- Print out documents written on the computer in order to edit it.

- Bring people physically into your office to see an interesting web site (rather than sending it).
- “Did you get my e-mail?” Phone call.

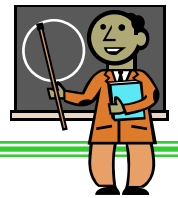
- Do not believe their students can learn successfully while watching TV or listening to music.
- Think that learning can’t (or shouldn’t) be fun.

DIGITAL NATIVES – (DN)

- DN are used to receiving information really fast.
- Like to parallel process and multi-task.
- Prefer their graphics before their text rather than the opposites.
- Prefer random access (like hypertext).

- They function best when networked.
- Thrive on instant gratification and frequent rewards.

- **Prefer games to serious work.**
- **Grew up in the “twitch speed” of video games and MTV.**
- **Are used to the hypertext, downloaded music, phones in pockets, a library on their laptops, beamed messages and instant messaging.**
- **They have been networked most of all of their lives.**
- **They have little patience for lectures, step-by-step logic and talk-tests instruction.**



Methodology

- Teachers have to learn to communicate in the language and style of their students.

- This means going faster, less step-by-step, more in parallel, more random access.

Content

- Legacy vs. Future Content
- Legacy – Includes reading, writing, arithmetic, logical thinking.
- Future Content – Digital Technological. Includes software, hardware, robotics, nanotechnology. It also includes ethics, politics, sociology, and language.

Do they really think Differently?

(Marc Prensky)

- **D.N. brains are likely physically different as a result of the digital input they received growing up.**
- **Evidence for neurobiology, social psychology and studies are done on children using games for learning.**
- **A vast majority of today's educators grew up with the understanding that the human brain doesn't physically change based on stimulation it receives from the outside especially after the age of 3. (Turns out incorrect.)**

- **Research in Neurobiology: Stimulation of various kinds actually change brain structures and affects the way people think, and that these transformations go on throughout life.**

- **Old idea that we have a fixed number of brain cells that die off one by one has been replaced by research showing that our supply of brain cells is replenished constantly.**

- **The brain constantly recognizes itself -- all our childhood and adult lives, a phenomenon technically know as neuroplasticity.**

The Gap Between Digital Learners & Digital Immigrants

Understanding Digital Kids

Teaching and Learning in the new Digital Landscape

Ian Jukes

1. **Digital Learners prefer receiving info quickly from multiple multimedia sources. Many educators prefer slow and controlled release of info from limited sources.**

2. **Digital Learners prefer parallel processing and multi-tasking. Many educators prefer singular processing and single or limited tasking.**

3. **Digital Learners prefer processing pictures, sounds, color, and video before text.**

4. **Digital Learners prefer random access to hyper-linked multimedia information. Many teachers prefer to provide info linearly, logically and sequentially.**

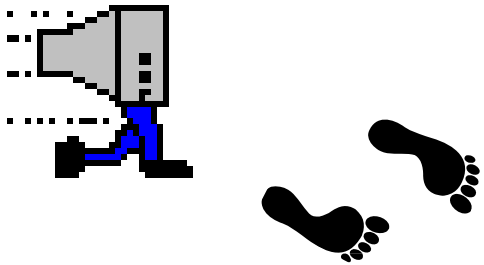
5. **Digital Learners prefer to network simultaneously with many others. Many educators prefer students to work independently before they network and interact.**

6. **Digital Learners prefer to learn “just-in-time.” Many educators prefer to teach “just-in-case.”**

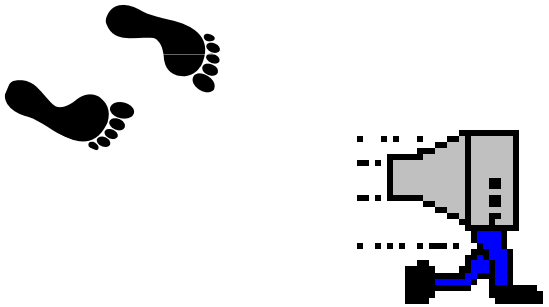
7. **Digital Learners prefer instant gratification and immediate rewards. Many educators prefer deferred gratification and delayed rewards.**

8. **Digital Learners prefer learning that's relevant, active, instantly useful and fun. Many educators prefer feeling compelled to teach to the curriculum guide and tests.**

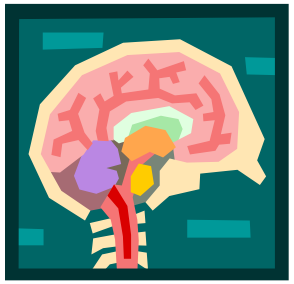
Seven major changes we believe education and educators must make to prepare our students for the 21st Century.



It’s time for educators and education to catch up.



Teachers must teach to the whole mind.



- **Technology Fluency**
- **Media Fluency**
- **Information Fluency**
- **Online Social Fluency**

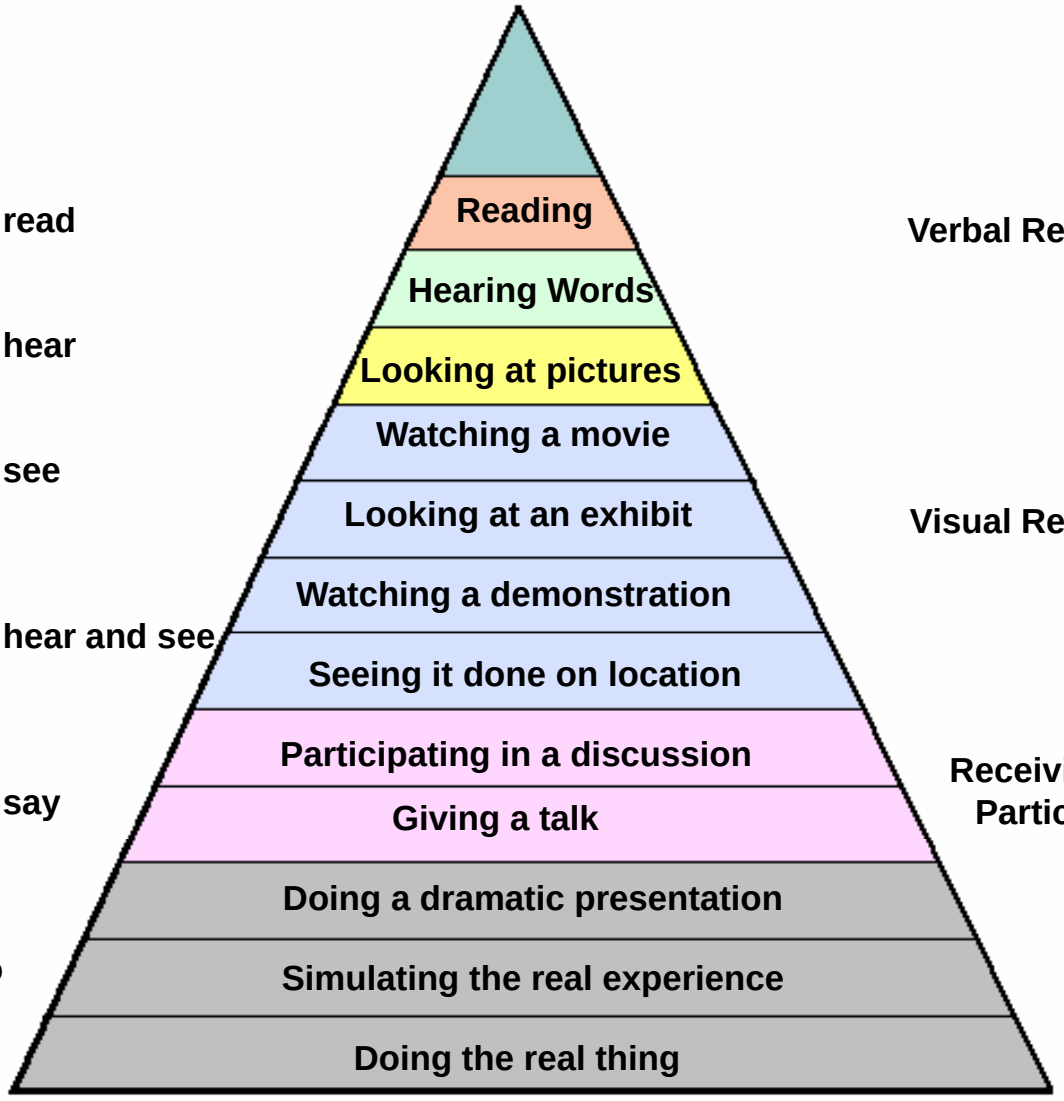
Educators need to shift their instructional approach

- **Edgar Dale's Learning Cone**

- **Standardized Tests for Non-Standardized Brains**

- **A focus on HOTS – (Higher Order Thinking Skills)**

Dale's Learning Cone



What their research tells us is that on average after two weeks we recall:

- **Less than 10% of the content of what we read**
- **About 20% of what we hear, like from a lecture**
- **20 to 30% of content simultaneously using two or more media, like looking at pictures or watching a movie**

- About 30% of lessons involving demonstration
- About 50% of content that we hear and see while watching a demonstration that uses two or more media simultaneously
- 65-80% of content that involves practice by doing like participating in a discussion or giving a talk

- **And about 90% that involves the teaching of a concept to others as well as the immediate application of the learning within the context of real time, 

task or a simulation of that task.**

- We need to let students access information natively.
- We must let students collaborate.

- We need to let students create Real World Digital Products
- We must re-evaluate assessment and evaluation

How do we bridge the Digital Divide?

First, we need to roll up our sleeves and acknowledge and embrace their world.

- **Meet the digital generation half way**

- **Be willing to acknowledge and embrace their world.**

- **Be able to leverage their digital lifestyle and help each and every one of them become better, more engaged, and more independent learners.**

Second, if we want to prepare them for the world that awaits them;

If we want our children to have relevant 21st Century Skills; we must create a bridge between their digital world and ours.

http://www.schooltube.com/video/21838/Learning-to-Change-Changing-to-Learn--Kids-Tech

One-to-One Plan for Tenafly Public Schools

Vision:

To provide the Tenafly school community with the vision, tools and strategies for creating a learning environment which enables interactivity, adaptability and collaboration and provides engaging content, creative opportunities, and relevance for digital learners who must thrive as global citizens in the midst of exponential change.

To create and support a systemic environment where all teachers voluntarily and continuously reinvent their practice, through the use of emerging technologies, to improve teaching and learning.

Timeline:	Year 1 2009-10	Year 2 2010-11	Year 3 2011-12	Year 4 2012-13	Year 5 2013-14
Wireless infrastructure	HS and MS and possibly new construction ES	Completion of ES	reevaluate	upgrades	upgrades
Laptops for Teachers HS 125 MS 125 ES 130	Blue Bird group HS and MS teachers* 40 total – 20 Dell tablets and 20 Macbooks	(Commit to one platform)** An additional 40 teachers in each HS and MS totaling 100 teachers	Aim for all HS and MS staff	All ES staff	Start of Evergreen Plan for teachers (1/4 of laptops replaced – ongoing)
Classroom Projectors	Mobile projectors for blue bird group – allowing piloting of various models (Epson, Dell, etc…)	Installing ceiling mounted projectors for classrooms of the 100 teachers with laptops without the 46" TVs	Installing ceiling mounted projectors for classrooms of the remaining teachers with laptops without the 46" TVs		

Laptops for Students HS/MS	X	X	X	HS***	MS***
Smart Boards	ES 12 wall mounted SMART boards per year with ceiling projectors (3 per bldg)	ES 12 wall mounted SMART boards per year with ceiling projectors (3 per bldg)	ES 12 wall mounted SMART boards per year with ceiling projectors (3 per bldg)	ES 12 wall mounted SMART boards per year with ceiling projectors (3 per bldg)	ES 12 wall mounted SMART boards per year with ceiling projectors (3 per bldg)
ES laptops	12 laptops for the ES teachers who get SMART boards	ES Dell 620 desktops become obsolete therefore classroom desktops will be replaced with laptops Libraries will get upgraded desktops or laptops based on librarian input	X	X	X

Staff Development	Blue bird groups supported by in-house tech staff developers after initial training: 1.Dell tablet Academy at HCRHS during summer 2008 (20 staff) 2.Apple training (20 staff) Blue Birds meet periodically during the year to share experiences and continue their training**** Teachers and students be surveyed and staff development be geared toward survey findings and current best practices All Professional Days include an instructional technology component	20 Blue Birds turn key training to additional staff during professional days and monthly department/team meetings Teachers and students be surveyed and staff development be geared toward survey findings and current best practices All Professional Days include an instructional technology component ES teachers will need time to learn about the use/maintenance/classroom management of their new classroom laptops possibly during the first or second day of work in September	The pool of teachers able to train their colleagues grows Trainings take place during professional days and monthly department/team meetings Teachers and students be surveyed and staff development be geared toward survey findings and current best practices All Professional Days include an instructional technology component	The pool of teachers able to train their colleagues grows Trainings take place during professional days and monthly department/team meetings Teachers and students be surveyed and staff development be geared toward survey findings and current best practices All Professional Days include an instructional technology component	The pool of teachers able to train their colleagues grows Trainings take place during professional days and monthly department/team meetings Teachers and students be surveyed and staff development be geared toward survey findings and current best practices All Professional Days include an instructional technology component

Staffing	Additional full time technician (based on 600 to 1 ratio of computers to technicians) and an additional full time staff developer	Additional full time senior technician	Additional junior network administrator	Technology secretary and student interns	

*Blue Bird group will be selected via an application process.
Questions for Blue Bird group application:
Why would you like to be selected to pilot a laptop/tablet?
How do you imagine a laptop/tablet will change the way you teach?
How do you imagine it will change the classroom learning environment for students?
What are your technological interests and/or strengths?
Are you willing to train and/or share your experiences with other colleagues?
Do you prefer Mac or PC or either?

- **Applications will be reviewed and participants selected by the Technology Steering Committee.**
- ****The group becomes a professional learning community that meets, discusses, and troubleshoots periodically throughout the year (possibly fulfilling various components of the contractual Professional Learning Commitment.)**
- **Commit to summer and school year training**
- **Commit to become turn key trainers for colleagues**
- **Participate in discussions on Moodle and/or keep a journal of experiences**
- ****While it is best to commit to one standardized hardware platform for most teachers we recognize that specialized subjects, such as the Arts, may be better served by a different platform.**
- ***Computer labs may begin to be phased out freeing up classroom space. One classroom in each building may need to be dedicated to a "laptop hospital."**