

# Holliston High School Technology Plan

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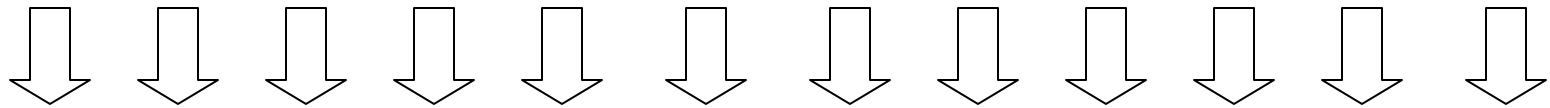
December 10, 2009

A Technology Vision to  
Support our  
On-going Efforts  
to Transform  
Holliston High School  
into a  
21<sup>st</sup> Century School.

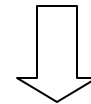
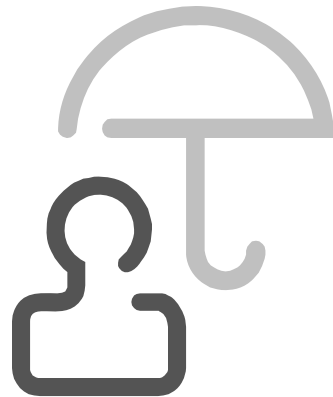
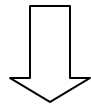
# TECHNOLOGY AS AN “ADD-ON”

“Technology is cascading down on students all the time in their lives outside of school.”

Mitchell Chester, Commissioner @ DESE Summit



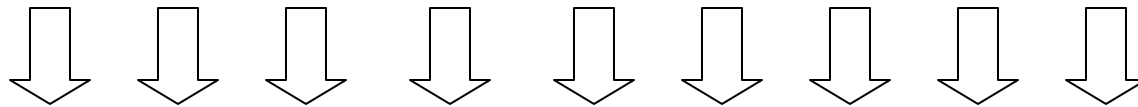
Isolated use  
of desktops  
and laptops  
as a “treat”  
by some  
teachers



Use of web  
1.0 tools by  
some  
teachers  
and 2.0  
tools by few

# ESSENTIAL QUESTION

What if our school environment  
became more like the one that  
our students live in?

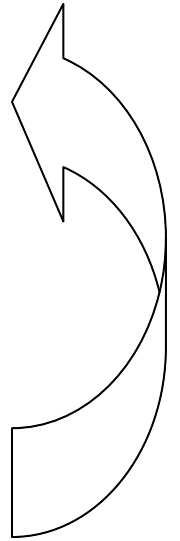
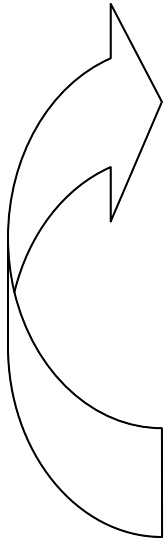


COLLABORATION

COMMUNICATION

CREATION OF CONTENT

CRITICAL ANALYSIS OF  
INFORMATION



# ENDURING UNDERSTANDING

- BY HARNESSING THE POWER OF TECHNOLOGY BY INTEGRATING IT INTO THE WAY WE DO BUSINESS WE DEEPEN STUDENTS' UNDERSTANDING OF CRITICAL CONCEPTS, TEACH THEM 21ST CENTURY SKILLS AND PREPARE THEM FOR AN INFORMATION AND MEDIA RICH SOCIETY.

# Three Types of Educational Outcomes

- Knowledge – what students know and are able to do
- Skills – what attitudes or habits of mind students should display <sup>[1]</sup>
- Understanding – Ability to use knowledge and skills in context. To use knowledge in authentic situations and understand the background of that knowledge <sup>[2]</sup>

[1] Marzano, R. (1992). *A different kind of classroom: Teaching with dimensions of learning*. Alexandria, VA: Association for Supervision and Curriculum Development.

[2] Wiggins, G. & McTighe, J. (2005). *Understanding by Design*. 2<sup>nd</sup> ed. Alexandria, VA: Association for Supervision and Curriculum Development.

# Declarative Knowledge

- Mathematics – What is  $4 \times 4$ ?
- Science – What is the chemical symbol for Oxygen?
- History – When did Japan attack Pearl Harbor?
- Language Arts – How do you spell “lieutenant?”
- Foreign Languages – What is the past tense of the verb “être?”

# Procedural Knowledge

- Music – Can the student play the piano?
- Art – Can the student draw a three-dimensional object
- Language Arts – Can the student write a five-paragraph persuasive essay?

# Assessing Knowledge

- Measuring Declarative Knowledge
  - Multiple choice tests
  - True-False tests
  - Short-answer essays
  - Fill-in-the-blank quizzes
  - MCAS/SATs
- Measuring Procedural Knowledge
  - Performance Assessment
    - Compare performance against norm using a rubric

# WE TEST WELL

OUR STUDENTS ARE ABLE TO SCORE  
WELL ON STANDARDIZED TESTS  
AND THEY SCORE WELL ON OUR IN-  
HOUSE ASSESSMENTS.

IS IT ENOUGH?...

# 21<sup>st</sup> Century Skills

- Learning and Innovation Skills
  - Critical Thinking and Problem Solving
  - Communications and Collaboration
  - Creativity and Innovation
- Digital Literacy Skills
  - Information Literacy
  - Media Literacy
  - Information and Communication Technologies (ICT) literacy
- Career and Life Skills
  - Flexibility and Adaptability
  - Initiative and Self-Direction
  - Social and Cross-Cultural Interaction
  - Productivity and Accountability
  - Leadership and Responsibility<sup>[3]</sup>

[3] Trilling, B. & Fadel, C. (2009). *21st century skills: Learning for life in our times*. San Francisco: Jossey-Bass.

How do you define  
**UNDERSTANDING** and  
assess whether or not a  
student has achieved it?

<b>Title:</b>	
<b>Stage 1: Desired Results</b>	
<b>Understandings</b>	
◆What will students understand (about what big ideas) as a result of the unit? “Students will understand that...”	
<b>Essential Questions</b>	<b>Knowledge &amp; Skill</b>
◆What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?	◆What is the key knowledge and skill needed to develop the desired understandings? ◆What knowledge and skill relates to the content standards on which the unit is focused?
<b>Stage 2: Assessment Evidence</b>	
What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met? [Anchor the work in performance tasks that involve application, supplemented as needed by prompted work, quizzes, observations, etc.]	
<b>Performance Task Summary</b>	<b>Rubric Titles</b>
<b>Self-Assessments</b>	<b>Other Evidence, Summarized</b>
<b>Stage 3: Learning Activities</b>	
◆What sequence of learning activities and teaching will enable students to perform well at the understandings in Stage 2 and thus display evidence of the desired results in stage one? Use the WHERE TO acronym to consider key design elements.	

How do you teach and  
assess to assure knowledge  
and understanding while  
developing  
21<sup>st</sup> Century Skills?

# Here's One Way...

Big Idea

Essential Question

The Challenge

Guiding Questions

Guiding Activities

Guiding Resources  
Web and iTunes U

Solution - Action

Assessment

Publishing - Student Samples

Publishing - Student Reflection/  
documentation

But, there's one thing  
stopping us from moving in  
this direction...

... the current state of our  
Technology.

We need to establish a bold and innovative vision to update our technology and, once updated, maintain it at a state-of-the-art level.

We need to explore a...

... 1:1

computing environment

at

Holliston High School

# What is a 1:1 Computing Environment?

- All faculty and students receive a laptop computer
  - with in-school internet access
  - for at-home and in-school use
  - with integrated easy-to-use software for:
    - Communication
    - Collaboration
    - Publishing

# I understand the need for computers, but why 1:1?

- Model of desktop computing does not match the way today's students use their current technology.
  - Blackberrys
  - iPhones
  - Droid
- Just-in-time computing requires portable 1:1 access
- Allows for consistency of tools/Common Language

# I guess that makes sense, but what does the research say?

- Current research points to many positive outcomes, including:
  - Improved writing skills
  - Improved depth of student research
  - Increased student interest in learning and ownership of the learning process
  - Improved student and staff attendance
  - Reduction in student behavior problems
  - Significant reduction in lecture/presentation instruction and an increase in project-based learning activities

# Are there any other benefits?

- Broadens learning beyond the classroom
  - Leverages internet to blur the line between learning at school and at home.
- Takes advantage of the teachable moment.
  - “That’s an interesting question... How can we investigate that subject.”
- Prepares students for tomorrow’s workplace and today’s college environment.

OK. I get it. But, how are we going to pay for that?

■ Three Options:

- State Funded – We can wait for Massachusetts to follow Maine's lead...
- Taxpayer Funded – We can adjust our local tax rate to pay for it; or
- Shared Funding – We can pay for some and ask parents whose students receive the at-school and at-home benefit to pay for some of it.

# How would the shared model work?

- Holliston Public Schools would pay for:
  - Network infrastructure
  - Laptops for faculty
  - Additional staff member to support efforts
- Parents would pay for:
  - Their student's laptop

# As a parent, what might that cost me?

- Assuming a \$1,000 laptop:
  - \$250/year lease
    - \$25/month for 10 months/year
    - Comparable to cost of lease/purchasing a flute (\$900) or saxophone (\$1600)
- Our preliminary research shows that many parents expect to purchase a laptop computer for their child some time during their HS years.

# How about the impact on the school budget?

Expenditure	Fiscal Year			Total
	2009-10	2010-11	2011-12	
Lap-tops	\$20,000	\$70,000		\$90,000
Hardware Infrastructure	TBD	TBD	TBD	
Software Infrastructure	TBD	TBD	TBD	
Personnel		\$32,500	\$65,000	
Professional Development	\$10,000	TBD	TBD	
Total				

Of course, there are issues to work out...

- What to do if a family can't afford it?
- What type of system should we consider?
- What type of Professional Development will our teachers need?
- What are the specific costs in going forward with 1:1 computing?
- Lease or Purchase?

# To help us iron out those issues, we need to test this concept.

## ■ Recommended Action:

- Allocate \$20K to form and equip a Professional Learning Community Study Group to study the use of laptops by faculty.
  - Equip each participant with Apple MacBook
  - Conduct on-line and face-to-face discussions
  - Explore use of tools as both instructional devices and opportunities for students to demonstrate their understanding
  - Choose and employ one Web 2.0 tool for student use
  - Act as peer “experts” should 1:1 program be adopted
  - Consult on final decision to initiate 1:1 program
    - Timing
    - Hardware selection

# Why Apple?

- We already have extensive knowledge of PC's through our current usage.
- Apple does have integrated hardware and software product-set that meets the needs of the education market.
- Some MetroWest communities have already outfitted their faculty with MacBooks with great success
- We should investigate all options before committing to one platform

OK. If we went in this direction, what type of timeframe are we talking about here?

- Remainder of SY09-10
  - Conduct PLC study
  - Develop complete plan addressing all unanswered questions
  - Update School Committee on PLC results
- School Year 2010-11
  - Purchase laptops for remaining HHS faculty
  - Conduct extensive Professional Development
  - Communicate formal plan to 8<sup>th</sup> grade parents
- School Year 2011-2012
  - Distribute laptops to all incoming 9<sup>th</sup> graders

Thanks for the “Big Picture” but  
What are you looking for tonight?

- Acknowledgment from the School Committee that a 1:1 computing environment at HHS is an idea worth exploring.
- Authorization to allocate approx. \$20,000 of the Fall Town Meeting’s capital allocation for school technology to this study.