"Technology is just a tool. In terms of getting the kids working together and motivating them, the teacher is more important than the tool." - Bill Gates

1:1 Initiative

November 23, 2015

VISION STATEMENT - (May-June 2014)

"Technology opens pathways to explore, innovate and collaborate in order to cultivate globally aware citizens.“

MISSION STATEMENT- (May-June 2014)

"Provide effective technology resources and training to foster a community of academic risk taking, innovation, collaboration, and global awareness."

LIVINGSTON PUBLIC SCHOOLS 1:1 INITIATIVE

November 23, 2015

What's Happened Since October 5?

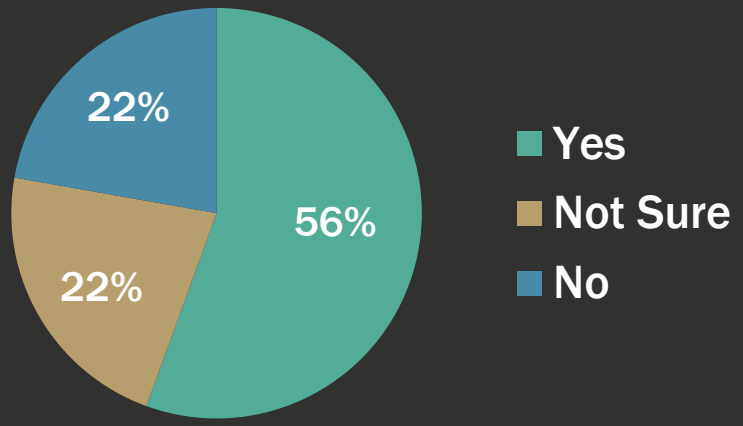
- 1:1 Initiative Website on the District Homepage and each School Homepage
- Staff Technology Professional Development（Oct. 12）LHS, HMS/MPMS, Elementary
- MSET Cohort at Livingston (Masters in Educational Technology – Ramapo College)
- Staff Technology Professional Development Website Under Construction
- Informational Meetings with HSA Committees
- NEW District Technology Student Committee
- District Technology Committee Weekly Meetings
  - Apple Presentation, November 3
  - Microsoft Presentation, November 10
- District Tech Committee work in subcommittees on various segments of the 1:1
- Needs Assessment Survey (Teachers and Supervisors - Grades 7-12)

TECHNOLOGY STUDENT COMMITTEE SURVEY

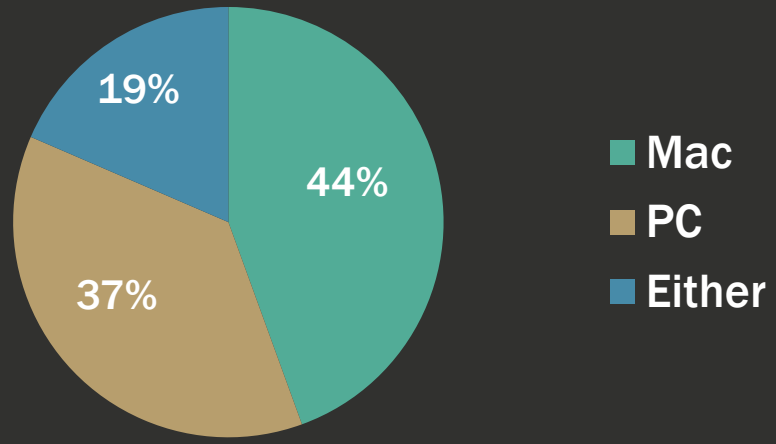
This is what they told us . . .

Based upon a survey of 27 students in Grades 7-12

Are you in favor of a 1:1 initiative at LHS and HMS?



Do you prefer a PC or Mac?



What are your biggest concerns about 1:1?

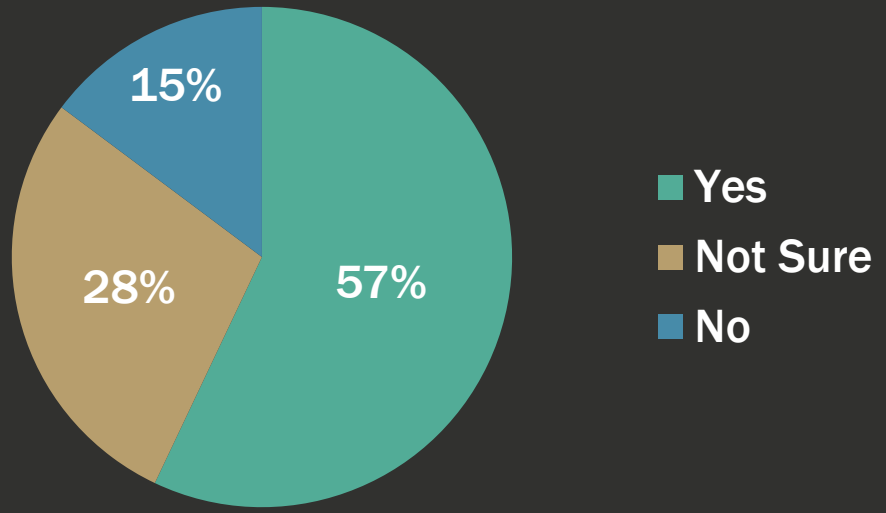
- Cost
- Weight
- Breakage/damage/theft
- Impact on the classroom (will it augment or impair? overuse of device, distraction)
- Quality of device (school vs own; BYOD)

TEACHER/SUPERVISOR SURVEY

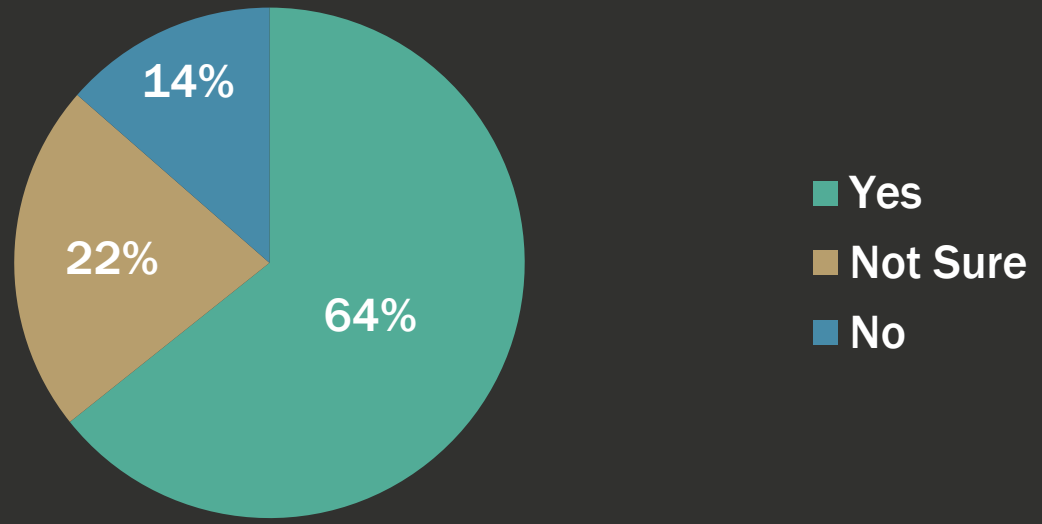
This is what they told us . . .

Based upon a survey of 142 Grade 7-12 Teachers and Supervisors

A "Touch Screen" is valuable to student learning



A "Stylus or Digital Pen" is valuable to students' ability to write on a device



TEACHER/SUPERVISOR SURVEY
And then they told us . . .

When asked what can't teachers currently do in their classrooms that is important for their students, they said:

- ❑ Students need equal access to laptops.
- ❑ Teachers & students need access to more educational applications.
- ❑ Teachers & students need immediate (real-time) feedback on student learning.
- ❑ Training (professional development) is essential.
- ❑ Teachers need ability to manage student devices in the classroom.

DEVICE SPECIFICATIONS

from the District Technology Sub Committee on Devices

Device Sub-Committee Report
October 30, 2015

Options	Committee Discussion Points	Additional Comments
Operating System	Windows or MAC OSX	
Processor	Intel i3 or better	
Screen Size	11" to 13"	
Touchscreen	Optional	leaning towards touch - cost factor?
Memory	4GB to 6GB	4GB should be sufficient
Wireless	Required	usually standard
Hard Drive	500 GB	size depends on cost
Solid State Drive	128GB	size depends on cost
Keyboard	Fixed	180 degree option?
USB Ports	1 to 2	number of ports may depend on cost
HDMI Port	Preferred	
Ethernet Port	Preferred	for wired connection
Bluetooth	Optional	
Web Camera	Required	
Speakers	Required	
Case	Optional	only for middle schools?
Weight	3lbs. to 4lbs.	
Battery Life	8 to 10 hours	

Pen? Keyboard? Voice? Touch?

Interfaces prompt different styles of learning

About the author

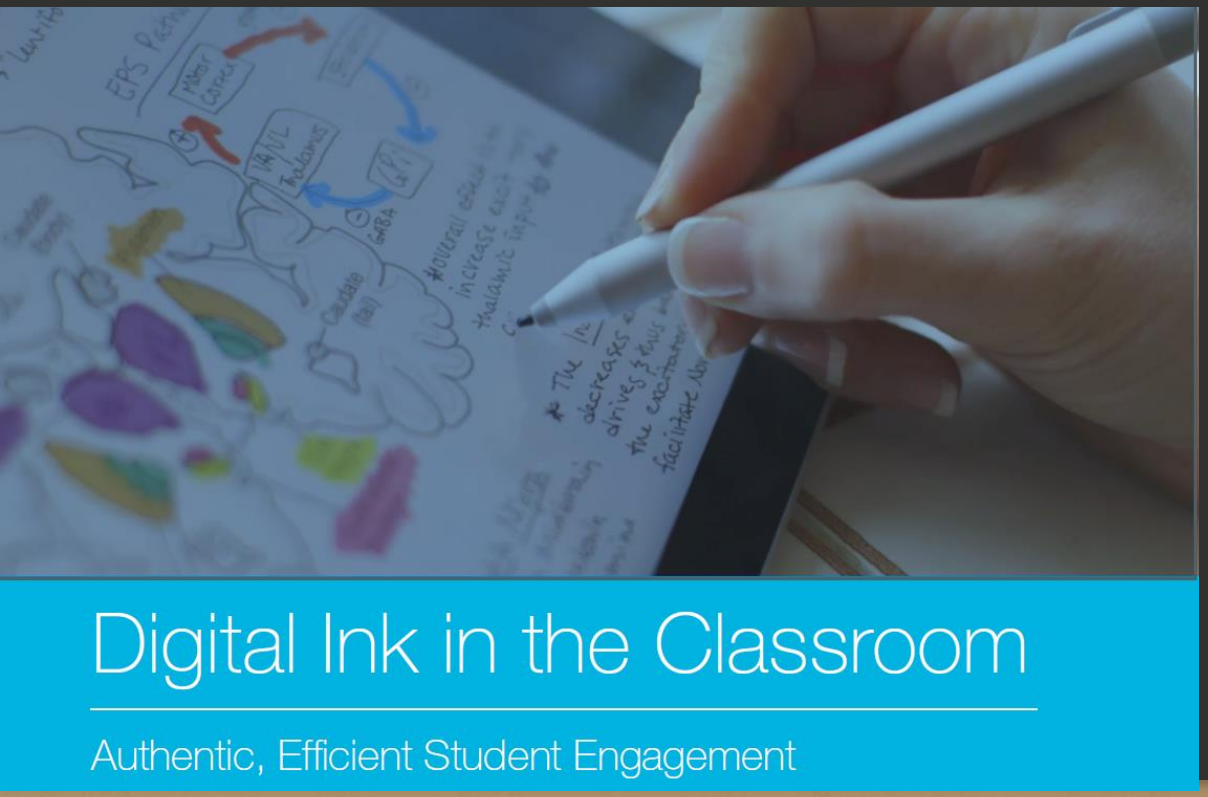
Professor Sharon Oviatt is internationally known for her research in human-centered, educational, mobile, multimodal, and communications interfaces. She is President and Director of Incaa Designs (http://www.incaadesigns.org/). She also is the author of The Design of Future Educational Interfaces (Routledge, 2013), and The Paradigm Shift to Multimodality in Contemporary Computer Interfaces (Morgan Claypool, to appear in 2015).

More information?

For further reading on this topic, and technical details of the studies discussed, see The Design of Future Educational Interfaces by the author (2013, Routledge).

- Digital Pens can convey all types of representation, including words, symbols, numbers, and diagrams.
- When students are solving a problem, they can shift flexibly between writing with the pen, typing and sketching.
- For example, diagramming a genetics problem, then writing formulas with numbers and symbols to solve it, and summarizing their answer in text.

What's Important . . Digital Inking Video



IDC Research on Digital Ink in the Classroom

- Notetaking
- Annotate your work
- Write directly on the screen
- 68% teachers say touch device with stylus increases quality of communications with students
- 88% teachers say touch allows an increase in quality of instruction

Why do pen interfaces have cognitive advantages?

- In subjects like math, about 80% of what students write is nonlinguistic content, rather than words.
- Pen interfaces are better suited for expressing spatial content than keyboards (diagrams, symbols) which is considered the foundation of thought.
- In studies where students diagrammed before solving a problem, their science scores were 25-36% higher than when they did not.

Source: IDC Research on Digital Ink in the Classroom

Adding a precise, on-screen digital pen:

The evidence is clear – the way students enter information into a computer makes a big difference.

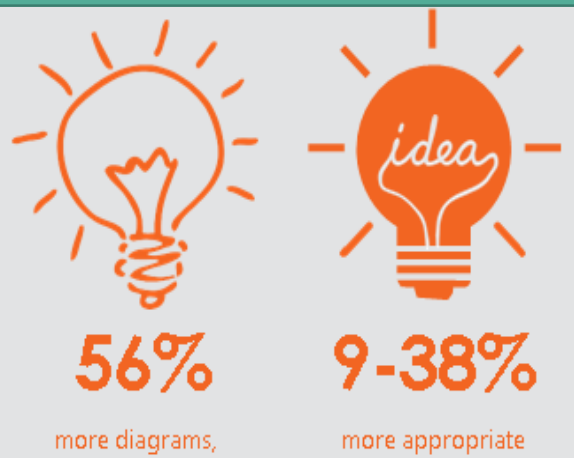
- Adding a precise, on-screen digital pen increases a student's ability to:
  - produce appropriate ideas, solve problems correctly
  - communicate and build on complex ideas
  - make accurate inferences about information
  - learn during notetaking and knowledge creation.

- The research shows this is one of the most important components in ensuring the suitability of a computer for learning.

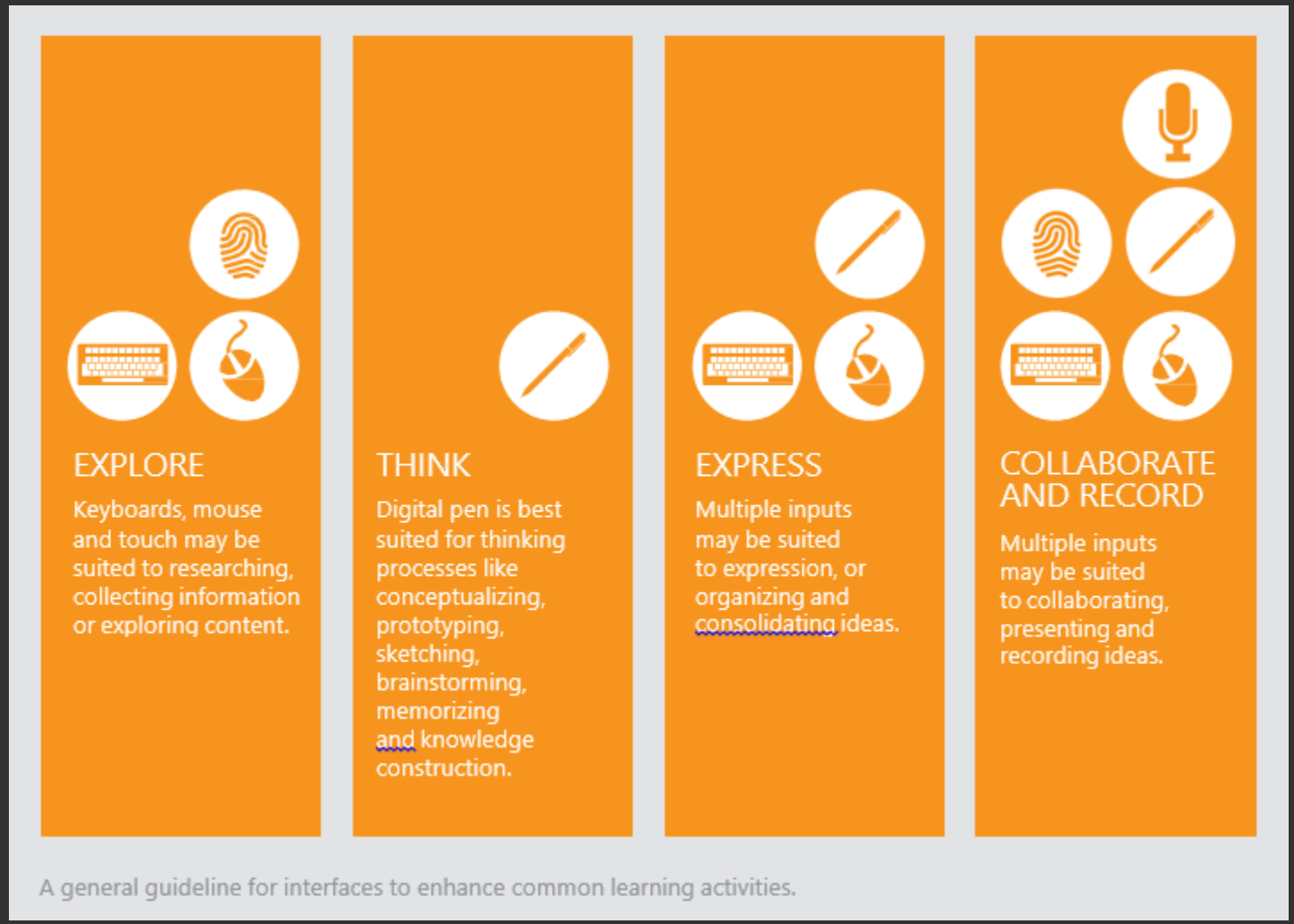
- The more complex the problem that students need to solve, the greater the benefit of using high-fidelity pen input.

Source: Computer interfaces and their impact on learning by Sharon Oviatt

Using a Digital Pen Students Produce . . .



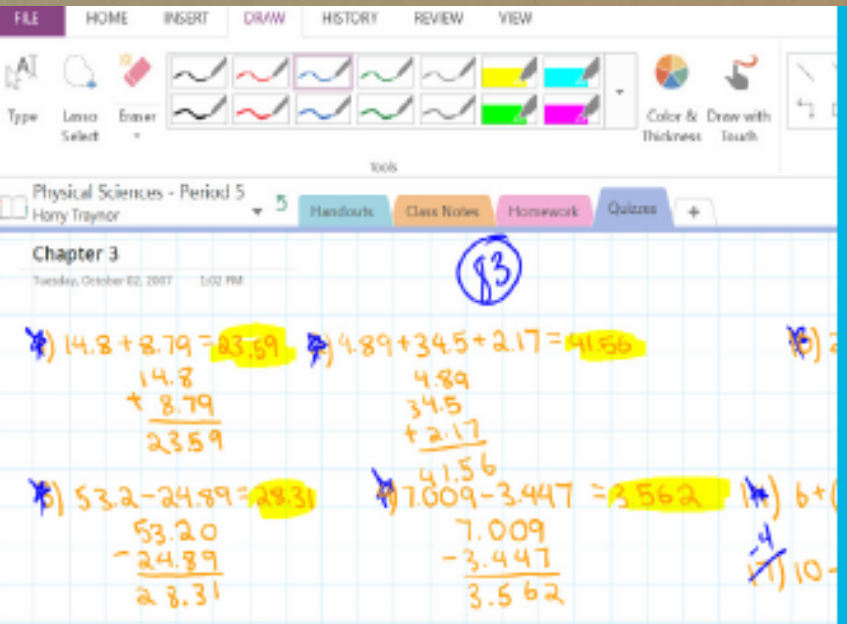
How do I choose interfaces?



Source: Computer interfaces and their impact on learning by Sharon Oviatt

OneNote
for Students

Lesson Planning
for Teachers



"I'm saving huge amounts of time. I don't bring papers home to grade anymore—I do it all at school. It's all on my computer so I can look at it during any open period. I have a 40-minute open period, and normally I wouldn't start grading because I couldn't finish in time. With a tablet PC, that's not an issue."

—**Elementary School Teacher**

Consider white boards: I erase and redo every period, six times a day. Now, I just complete a template on OneNote, and fill it in.

—**High School Science Teacher**

"Technology-related professional learning plans and opportunities with dedicated time to practice and share ideas" ISTE (International Society for Technology in Education)

Ongoing Sustainable Professional Development

PROFESSONAL DEVELOPMENT OPPORTUNITIES:

- Meet each individual's needs with relevant training
- Are implemented on a regular basis
- Continually updated to reflect trends/technologies

WHERE DO TEACHERS START?

TIMS - What does effective technology integration look like? What does it mean? How can it be described in a way that provides guidance to teachers at every experience level?

Considerations in choosing the DEVICE

- ✓ Cost
- ✓ Device Weight
- ✓ Compatibility with Existing Infrastructure
- ✓ Touchscreen
- ✓ Digital Pen
- ✓ Battery Life
- ✓ Students and Faculty familiarity with Operating System
- ✓ Device Warranty
- ✓ Partnership with Manufacturer
- ✓ Professional Development

DEVICE COMPARISON

DEVICES UNDER CONSIDERATION

- MacBook Air
- Microsoft Surface

- Detailed comparison of the features of both devices
- Cost analysis of procuring and deploying

DEVICE COMPARISON . . .

Student Device	Macbook Air	Surface 3
Type	Laptop	Laptop & Tablet
Processor	1.6GHz dual-core Intel Core i5	Quad-core Intel Atom x7-Z8700
Memory (RAM)	4 GB	4 GB
Flash Storage (SSD)	128 GB	128 GB
Display	11.6"	10.8”
Battery Life	12 hours video playback	10 hours video playback
USB ports	2 USB 3 ports	1 USB 3 port (& microSD card reader)
Camera	1 HD Camera - 8 MP	(2 Cameras) 3.5 MP front-facing / 8 MP rear-facing
Keyboard	Standard (included)	NO Extra charge
Touch Screen	No	Yes
Digital Inking (pen)	No	Yes
Weight	2.38 lbs	1.37 lbs + keyboard weight
Case		
Warranty	3 yr - Screen Exception	3 yr incl screen

Device Recommendation – Microsoft Surface

- ✓ NO Additional Cost for Management System ($150K)
- ✓ Touchscreen
- ✓ Digital Pen
- ✓ Students and Faculty familiarity with Windows OS (Seamless Transition (Documents)/Learning Curve OS
- ✓ Total Device Warranty – Includes Screen Breakage
- ✓ Partnership with Microsoft
  - MS willing to discount and bundle for Livingston (device, keyboard and pen – one price)
  - MS creating a partnership with Livingston to become a SHOWCASE SCHOOL bringing national/global recognition. This brings assurance that Microsoft will continue to offer us perks so that we are as successful as possible.
  - They are investing in us on an extremely high level:
    - 13 Professional Development Days for Teachers/Admins in district = Value $32,000 FREE*
    - $50,000 PD for IT – FREE*

Three Year 1:1 Plan (recommendation)

	2016-17	2017-18	2018-19
LHS	New Surface Devices to Teachers Spring 2016 New Surface Devices to Students August 2016		
HMS	Existing Lenovo Laptops to Teachers Spring 2016 Existing Lenovo Laptops to Students August 2016	New Surface Devices to Teachers Spring 2017 New Surface Devices to Students August 2017	
MPMS	Existing Lenovo Laptops to Teachers Spring 2016 9 New Carts – Surface August 2016	New Surface Devices to Teachers	
ELEMENTARY	New Surface Devices to Elementary Teachers PC Labs (LHS and HMS) to refresh classroom PC's Add'l Chromebooks	Refresh 1st Gen Elem (2015 Chromebooks)	Refresh 2nd Gen Elem (2016 Chromebooks)

2016-17 ELEMENTARY SCHOOLS

Additional Chromebook Carts

	Current	New	Total
BES	6	1	7
CES	5	3	8
HAR	7	1	8
HIL	5	2	7
MPE	6	2	8
RHE	5	2	7

All Elementary Schools < 2:1 student to device ratio UTILIZING ALL EXISTING CARTS (NO NEW CART PURCHASES)

CAPITAL COSTS

CAPITAL COSTS

- Estimated capital costs associated with the deployment $105K

Items included:

- ❑ Infrastructure Modifications
- ❑ Tech Area Setup And Retrofitting
- ❑ Inventory Control
- ❑ Security

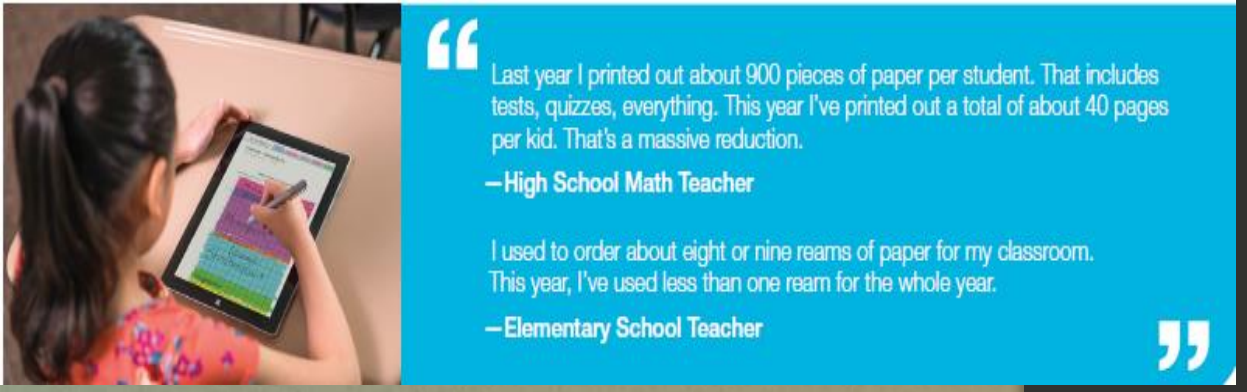
RECURRING COSTS

Recurring Costs

- Yearly **$92K**

Items Included:

- ❑ Additional Personnel (1 FTE)
- ❑ Licensing Fees
- ❑ Other Miscellaneous



BENEFITS

BENEFITS

- Space Recovery
  - Converting 6 Computer Labs To General Education Classrooms
    - ❑ More Flexible Scheduling
    - ❑ Better Room Utilization
- Paper Reduction Especially With Digital Inking
  - Estimated Savings $25K
- Purchase of eBooks vs. Textbooks
  - Estimated Savings TBD
  - Lighter Backpacks
- Reduced Cost of Copying (Toner and Copier Maintenance Agreements)

YEAR 1 BUDGET (DETAILS)

LHS Students (1833 x $865 + 5% inventory)	$1,664,822
LHS Staff (206 x $1000 + 5% inventory)	216,300
MPM Students (270 x $865 + 5% inventory)	245,228
Elementary Students (330 x $325 + 5% inventory)	112,613
Elementary Staff (259 x $1000 + 5% inventory)	271,950
	$2,510,913

How will we fund?

Lease $2.51M - 4 payments / 3 years

- $640,000 Yearly Payment

Yearly Lease Payment	$640,000
Device Insurance	-167,820
Paper Savings	-25,000
Overall Cost – Year 1	$447,180

FUNDING UTILIZED – CAPITAL/TECHNOLOGY BUDGET

NO ADDITIONAL TAXES TO BE RAISED

YEAR 2 BUDGET (DETAILS)

HMS Students (964 x $865 + 5% inventory)	$875,553
HMS Staff (96 x $1000 + 5% inventory)	100,800
MPM Staff (54 x $1000 + 5% inventory)	56,700
Elementary Students (570 x $325 + 5% inventory)	194,513
	$1,227,566

How will we fund?

Lease $1.23M - 4 payments / 3 years

- $310,000 Yearly Payment

Year 2 - New Lease (Yearly Payment)	$310,000
Existing Lease - Payment	640,000
Device Insurance	-167,820
Paper Savings	-25,000
Year 2 Cost	$757,180

FUNDING UTILIZED – CAPITAL/TECHNOLOGY BUDGET

NO ADDITIONAL TAXES TO BE RAISED

YEAR 3 BUDGET (DETAILS)

Elementary Students (390 x $325 + 5% inventory)	$133,088
	$133,088

NO ADDITIONAL LEASE REQUIRED

FUNDING UTILIZED – ANTICIPATED SAVINGS THROUGH 1:1 INITIATIVE (eBooks, printing)

IN CONCLUSION

K-12 Technology Provided at NO Additional Tax Impact

- 1:1 Devices – Grades 7-12
- Additional Devices – Grade 6
  - <2 students: device
- Additional Devices – ALL ELEMENTARY SCHOOLS
  - <2 students : device
- Updated Teacher Devices – ALL SCHOOLS

WHERE DO WE GO FROM HERE?

- Approve Budget
- Develop Policies and Procedures
- Begin Professional Development
- Continue Parent/Student Presentations
- Develop Detailed Rollout Schedule (Teachers in Spring; Students in August)

Let’s agree to say YES to The Connected Classroom