Change Proposal
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The Smart Choice: Interactive Touchscreen Monitors

A. Problem

As the media specialist of a middle school library, I came across several technology issues that I dreamt about bringing into the 21st Century. One perpetual issue was the malfunctioning of overhead projectors. The overheating, loud fan, frequent need to change the very expensive $300 bulbs, and the nearly daily barrage of calls to help with hookups, breakdowns, and simple confusion over basic functions made maintenance a nightmare. Additionally, projector lamps are huge energy drains and significantly raise a school's monthly electric bill. Some teachers became so impatient and frustrated with the technology they opted to use the older bulky models with overhead transparencies.

I further noticed that many teachers weren't using their interactive whiteboards (Smartboard) either. After investigating, I found they preferred to use the wall to project their lessons, ignoring or removing the Smartboard altogether. The Smartboard would malfunction, scratch and stain, and with only one touchpoint, this hampered collaboration among groups interacting within the Web. The Smartboard was little more than a glorified mousepad with limited capabilities. Coping with the projector, the whiteboard, their computers, and other tech was just too much. Classrooms were becoming a bit of tech-soup, with a great need for streamlining processes. Instead of gambling their lessons on unreliability, the stopped using the tech altogether.

Then it occurred to me that every school in United States who equipped their school with the Smartboard and projector combo grappled with these same issues, and I wondered if there were other solutions. Did other countries employ this technology and were they having the same problems? Or did they find more efficient ways for whole-class collaboration and communication. We've come a long way from the dusty black chalkboard, but have we fully evolved into the perfect system?

For what was available in the 90s, Smartboards fit the bill. But I think there is a better solution. The revelation came when I visited the Monterey Bay Aquarium, where the latest in interactive Touchscreen technology had been successfully in use. I further discovered that many European countries were also using this tech in their schools, having completely switched over from pricy Smartboard/projector systems.

B. Intervention

My proposal is to replace the whiteboard/projector tech with large LCD screens. With LED backlit LCD technology, the screen presents a brighter, more colorful, higher definition image which does not dim over time. Interactive Touchscreens have an inbuilt HD tuner, and a large

selection of inputs to display a number of video and data source signals in superior Full High Definition. The screens are highly durable and you can use up to 35 points of simultaneous touch as well as 'gesturing' which has been popularized by smartphones and tablets (think very large iPad).

And this option is far less expensive! The total cost of ownership of a whiteboard and projector is $20,305. The total cost of a Touchscreen ownership is $3,000 for standard 55' model. (Cost varies depending on size.) A study by Edis Education reports that LCD Touchscreens are a very well proven technology with many millions of LCD TVs in operation around the world having a lifespan of at least 60,000 hour or higher, many manufacturers now claim 100,000 hours (mind you 100,000 hours is a life of over 65 years - a little bit longer than the technology has been around!). The study further notes:

- LCD Touchscreens do not suffer from burn-in caused by a static image as was the case with old style CRT screens. Since LCD crystals are back-lit by a separate light source, if the bulb burns out it can be replaced.
- LCD displays have no moving parts like the fans, a crucial part of a projector, that fail after an extended life, especially in dusty classrooms
- If we use 6 hours per day and 220 school days per year, 60,000 hours equates to about 50 years' lifespan, in reality the technology will move on apace and no doubt we will have some very different options available during the next 10 years or so.
- Power consumption of energy hungry projectors increases school's electricity bills - a typical Touchscreen uses less than half the electricity consumed by a projector during its life, and has ECO power saving features.
- Touchscreens require no cleaning or maintenance (just remove finger marks with a damp cloth).
- The tough and resilient Touchscreen using infrared (IR) technology typically has a 4mm or 5mm toughened anti-glare glass screen and is almost indestructible – more akin to the windscreen of a car – and effectively has an indefinite lifespan in the classroom.
- Another benefit of Touchscreens is the portability of the software used which is a hidden cost saving. The main suppliers of interactive whiteboards have been very reluctant, in my view, to make their software independent of their hardware. So the enormous effort of creating content for the classroom may be lost when changing schools, or even classrooms, that use a different whiteboard supplier. The beauty of Touchscreens is that independent software is available (usually supplied free with the Touchscreen) that can be used on any Touchscreen or interactive whiteboard. I can see the opportunity for even newly qualified teachers to carry their content and lesson plans etc. with them from school to school with a copy of the software. No need to waste time re-creating lessons for different technology or equipment suppliers.
- There is no contest between the cost of ownership of Touchscreens and a projector/whiteboard combination, the initial purchase is lower and the ongoing costs for

Touchscreens are minimal compared to the enormous $20,000 total life cost of the projector and whiteboard combination – you can save more than 80% of this by buying a Touchscreen. Not to mention the stunning performance, pupil intuitive features and usability in normal classroom lighting conditions.

C. Evaluation

Outcomes cannot merely be price driven. There must be measurable success in the areas of student engagement, convenience and usability among teachers, and maximum efficiency in lesson content delivery. The following are some evaluative criteria to consider:

a. Linking learning outcomes in class collaboration
b. Lesson structuring
c. Efficiency over Smartboard – can do the same interactive behaviors *better*
d. Enhanced instruction – a more advanced and creative product
e. Accessibility – multi-functionality means better access to web content increasing variety, thus increasing learning
f. Overall cost for a better, more quality product will determine the success of this intervention. Let's look at a side by side breakdown:

Cost of Purchase	**Cost of ownership** Total cost of ownership = Purchase costs + Ongoing Cost of Ownership (for say 60,000 hours)
Projector and whiteboard Projector, projector mount, interactive whiteboard, cables, speakers and installation. Typical supply and install cost = $3,321 **Touchscreen** Touchscreen with speakers, wall mount and installation. Typical supply and install cost = $3,000 	**Projector and whiteboard** Projector – projector life about 5 years, = 2x projectors = 2x $525 = $1,050 Projector mount – 2x $45 = $90 Interactive whiteboard – life about 5 years 2x whiteboards = 2x $2,195 = $4,389 Active Speakers – 1x $56 Cables 2x $50 = $100 Installation x 2 = 2x $450 = $900 Projector lamp (life 2,000 hours) = 30x projector lamps = 30x $300 = $9,000 Regular cleaning and maintenance = 1 every 300 hours = 200x 1 hour @ $20 = $4,000 Electricity for 6 hours 220 days per year Smart board = 1.98 kWh Projector = 396 kWh = $720 for 10 years **Touchscreen** Touchscreen life 60,000 to 100,000 hours = 1x 55"-75" Touchscreen including mount, audio and install = $900-$3,000 (depending on size and features) Electricity 171 kWh = $300 for ten years

A projector system is six times the cost of a Touchscreen over ten years! *(Based on 6 hours use per day for 220 days a year.)* That's a compelling argument for touchscreens being the most intelligent classroom solution available.

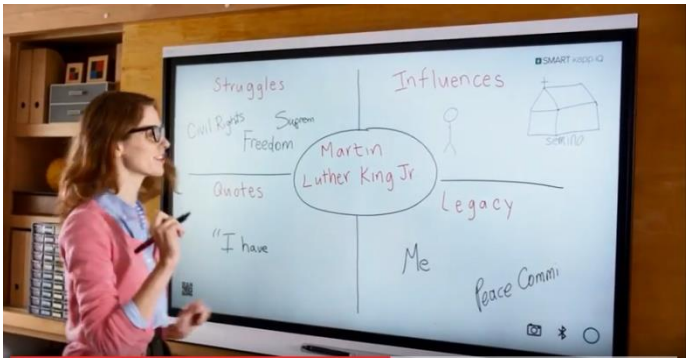
D. Narrative

1. Intervention

Here are the steps I took for intervention, and the resources I used to support my position:

- I sent an email to my technology coordinator and principal outlining a **New Trend** I was seeing in Europe. The email contained many facts from the points above.
- I had an informal meeting with my principal and technology coordinator, discussing the pros and cons of my proposal. The TC was in agreement but wanted to see examples. My principal was hesitant to dispense with the whiteboards at first and spend more money—she was under the impression that whiteboards were the innovative tech they invested in a few years ago. I said they were . . . at the time.
- I sent them links to studies as well as places to visit to see touchscreen monitors/video walls. These included:
  - ✓ European Schools— many have already switched over to this technology. Here is a video form the UK on Classroom Interactive Touchscreens that makes a compelling argument for touchscreens being the most intelligent classroom solution available. Further arguments:
    EdTech Solutions
    Level 3 Audiovisual Blog
    What is an interactive touchscreen for education?
  - ✓ 21C Library—the new buildingin Colorado Springs houses several conference rooms, some of which have large touchscreen monitors.
  - ✓ Classrooms—some schools in our area are starting to consider large touchscreen monitors for their classrooms. A local high school had recently bought one last year as a senior gift to the school.

2. Pedagogy



Teachers are reporting phenomenal results and increased engagement from students. Kids love the vibrancy of the screen and the familiarity—they already use iPads so the technology is simple to adapt to. Activities and learning games are easily pulled onto the screen and students can work together in groups comfortably. Teachers like being able to quickly show student work from devices in real-time; no waiting for infrormation to be laboriously transferred from paper to board. The whole process works seamlessly, moves at

a faster pace, and all work is saved and portable. For more see this video: InFocus JTouch Success Story: Marysville Elementary School.

E. Conclusion and Next Steps

Effecting change in K-12 can be challenging, even impossible at times—schools are often the slowest adopters of new technologies. Fortunately, I worked with an excellent principal who was open to new ideas. The TC's next step was to do some research, visit some sites where touchscreens were being housed, and report back to the principal and IT department. Talking to teachers during PLN's to get their perspective was also on the agenda, and possibly setting up some test classrooms. I passed on a few vendors to consider. One I really like is Planar. They've won a few awards, including Best Show at ISTE 2017. The video walls are a bit pricy, but I've seen costs come down in the last couple of years, and think in the long run it will save a significant amount in maintenance fees needed to keep up the whiteboard/projector combination.

Interactive Touchscreen Monitors aren't entirely about gauging learning outcomes, but learning processes. This technology is representative of what students will encounter in the real world, and they need to interact regularly with such devices. Further efficiency for lesson delivery demands that we move from the archaic classroom media to something more dynamic and true to the collaborative nature of our modern world. Imagine instead of a wall map relief which you find on most geography teacher's walls, you have thousands of maps through Google at your fingertips, or scientific models, or anything you can think of!

It's this:

Versus this:

I think the choice is clear.

Resources

Classroom Interactive Touchscreens [Video]. (2015, July 31). United Kingdom: Elementary Technology. https://youtu.be/Mn7C8eY3-j0

Edis-Bates, D. (n.d.). Edis Education. Retrieved January 20, 2017, from http://www.ediseducation.com/component/content/article/29-latest-articles/95-touchscreens-cost-80-less-than-a-projector-and-whiteboard.html

Get in touch. (n.d.). Retrieved January 20, 2017, from http://www.elementaryuk.com/interactive-touchscreens

Large Format Touchscreens - Replacing Interactive Whiteboards. (2015, April 08). Retrieved January 20, 2017, from https://www.educationtechnologysolutions.com.au/large-format-touchscreens-replacing-interactive-whiteboards/