



the tech commandments

ten ideas to help revitalize
education using ed tech

The Tech Commandments are a reaction to what I have seen and experienced in schools over the past several years. I am a firm believer that successful implementation of educational technology is one of the corner stones that can help bring our educational system back from the brink of collapse that I feel it teeters on now. Our students need real-world experiences, they need to understand and be taught with the tools that they have access to in our world today.

I hear veteran teachers say all the time that children and education have changed. I think only one of those is really true. Children have changed – because the world has changed. Education as a system and process has very much remained stagnant. It is time to explore our educational system a little closer and keep what works, fix what doesn't, and create a learning environment that fills our students with not only knowledge, but passion and the desire to learn.

We aim to prepare students of today for the life they will lead tomorrow and the following “ten commandments” are ideas that aim to help educators make the right choices when it comes to incorporating educational technology tools in the school setting.

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I. Training Is Essential

Providing training to staff is in many ways almost more important than the technology itself. If a school spends their entire budget for technology to buy “stuff” but nothing on teaching and supporting the use of the “stuff” for the purpose it was intended, it is a huge waste. Training and support should be a top priority. In addition, training should be pervasive. Enough with this one or two days a year business! How is a teacher going to “learn best practices” by watching someone train *at* them for a few hours one day out of the year? Teachers should have ongoing training to work with the technology, experience any growing pains, and learn what they need to be taught to make their classroom use of the “stuff” better. Having a staff trainer on call is a great model. For one thing, it takes away a lot of the pressures and demands that whole-staff training sessions can bring about. Educators can meet and work with the trainer(s) at their leisure and work on relevant uses of technology in their classrooms. This can be further enhanced by a group of designated teachers who might meet once or twice a month to share their experiences and discuss ways that using the technology in their class as a tool has enhanced the teaching experience.

Example – I was working at a school in 2004 and walked into my classroom one day to find a large white board on wheels and a large cart that had a projector on it and a computer tucked away in the cabinet of the cart. I thought the technology fairy was bringing me a gift. But what was it? No one really knew. I had never seen a SmartBoard before and had no idea what an interactive whiteboard could do or how/why I should use it.

Later that day we used the board to take notes on, as if it were any ordinary white-erase board. The faculty played DVDs through the computer afterschool and projected them onto the “movie screen”. The only interaction the board would know was being wheeled from one class to another. The cart was used as any teacher might use a computer hooked up to a projector – to explain programs, surf the web with the class, and of course – watch videos. In my two years in the school after we received the SmartBoard it was rare that the board and the cart were even in the same room.

The point should be clear – had the staff received some training on what an Interactive White Board could do for the classroom and how it can be used to impact student learning, then it might have been a different story. At the very least we would have known how to set it up and could have had a fighting chance of figuring out some of the usefulness on our own.

II. Money Isn't What Makes Educational Technology Work

Buying an expensive camera doesn't make you a good photographer. It just means you spent a ton of money on a piece of equipment. The same is true with educational technology – your school can have a SmartBoard in every classroom, document cameras and all sorts of video cameras and laptops for staff and students and that alone won't mean that your school is successfully using educational technology, just spending money on it.

Putting the right tools into place is important. Sifting through all the available tools is a fairly large task. For instance, picking the right software or hardware for use in the classroom is not a one-size-fits-all fix for the most part. There are so many products, websites, and services that come out every year and often times schools are blinded by a company's promises and literature that hail this product as *the one* to enhance test scores and make their students shine. But this is no different from ads on television that claim to have the product that will change your life and profess that you should act now before it is too late. Buying into technology shouldn't be such an impulsive process. Will the staff effectively use the tool? Will the students benefit educationally from its implementation? Does this tool replace another working tool in the school already or does it serve a new purpose? What is the life of the tool? (Both the mechanical life if it is a piece of hardware, and also its life in terms of sound value educationally – is it a fad?)

With so many free tools available for use in education today, many of them able to run on a bare bones computer with simple Internet access, having the latest and greatest computers in the class is almost irrelevant.

There are also a growing number of Open Source applications that serve as suitable substitutes for expensive software titles. Open Office is free and functions nicely as a Microsoft Office alternative. GIMP is a photo manipulation tool that is quite similar to Photoshop yet there is no charge for GIMP, where as Photoshop can be up to \$400 for a single license.

We are working and living in the age of smaller and cheaper – the netbook is a real computer and can cost schools 1/3 of the price they were paying for desktops that did (in some cases) less than these new mini-notebooks.

Thought and careful planning is what can make Ed Tech pervasive even in districts that don't have huge budgets for it.

Example – Many people love to buy color inkjet printers. They produce full color images and are often times much less money than a black and white laser printer. What people fail to realize or remember is that the color ink cartridges often need to be replaced with such frequency that the black and white printer would pay for it after only a few extra cartridges. Thinking about the needs of the school and the way to best use the tools available for purchase is most important. Sure, it is nice to have a color printer in the office, but wouldn't it be better to have one laser printer that didn't gobble up ink like a thirsty camel every few weeks.

III. Restricting Access Is Too Extreme

Keeping students safe has always been a top priority in schools. Is it important? Yes! Do we take it too far sometimes – Yes! Sex and Violence is a booming business in this country and the web is no exception. Violent video games usually are the most popular selling titles and there has always been a healthy appetite for sexually explicit content.

We need to keep students safe from overtly offensive areas of the web. Period. Hate speech, pornographic content, and graphic violence should be blocked from young students in and out of the schools. However, we need to educate our students – that is why they are in school. And education for the parents of these children is equally as important as filtering the web at school. If a first grader is blocked from offensive sites at school but has free reign of the web at home, we have neglected a major player in the education of these youngsters – their parents. Schools should have a responsibility to run Internet safety programs for parents and students in order to inform the parents of how to protect them at home and explain to the students the precautions they should be taking as they spend more and more of their time online.

When I was young I remember books being read to us and film strips that we watched about never talking to strangers and not taking candy from people in the playground. The dangers that lurk on the web are just as prevalent as the ones I was warned about as a kid. But education is the key. We need to teach these students how to behave online and be safe.

The flip side of the coin is the fact that we in the educational technology field typically block too much. There are laws in many states requiring strict monitoring and filtering of the web in schools.

Studies show that telling students to abstain from sex is not as effective in preventing pregnancy and STDs as teaching safe sex and giving students facts. The same logic carries over to the social networks and web tools of today. Most schools block Facebook, Twitter, MySpace, YouTube, and the like, because a) they don't understand them (just my theory) b) they are terrified that a student might post something obscene or read something unsavory on one of these sites and c) there is no way for the schools to truly control these sites with the same tyrannical reign that their filters patrol the rest of the web, "guessing" at what content "should" be safe for student viewing.

The same way a student can use foul language on the playground (or in class) or write a nasty note about a classmate on the board are the same behaviors that can be found on the web. But is pretending Facebook and other sites like it don't exist the answer? No, it is just ignorance. Most of the content that these students post that is considered lewd and offensive is because they are young, naïve, and most importantly because they don't have anyone explaining the environment to them. Parents are still slow to join, understand, and monitor the youngsters' online behavior and if school's pretend that the sites don't exist it can be far worse than opening up to these tools up for use as powerful and effective

communicative tools. Major companies are using these sites as a main way of disseminating information and the students are using them as their main communication means. We need to use these tools in the classroom and at the very least teach the students web etiquette that will make their profiles and interactions more productive and safer.

Example – I have kept in touch with students via Facebook for eight years now. Students that I taught as high school freshmen have just graduated from college. Over the course of those years I have been privy to the conversations, wall posts, videos, and pictures shared among these youngsters and their peers. While I am the first to admit that the content is sometimes “unsavory” and the language can contain a few expletives here and there – it is no worse than you would find in the classroom. For the most part students are staying connected to each other and leaning on each other more and more using these social networks. I have consoled students after the tragic death of one of their peers and I have counseled and been able to find help for a former student dealing with serious depression. The amazing thing about these sites is the support that students give one another. While there are instances of teasing and a little mischief, for the most part it is remarkable to watch these youngsters come to one another’s aide. Students ask for homework help and get it – not just answers but help. I have seen videos created for friends who were out sick as well as memorials for a classmate that was lost all too soon. While we wish we could ban all the “bad” from some of these sites, there is far too much worthwhile there to ignore them.

IV. Banning Tech Tools Is Detrimental

The same way we can block sites on the Internet, we also like to limit the tools students can use in the classroom. The cell phones that most students have in their bags are capable of being valuable learning tools for the classroom. Not only can it enhance the educational experience of the class, but also it can even save the schools money on such things as calculators, reference books, and student response systems. Children today are getting cell phones, laptops, and iPods at increasingly younger ages. While it is obvious to point out that not all children have these tools, due to the drops in price each year the numbers that do are growing exponentially. We are educating the children of today with the educational techniques and ideals of yesteryear. I have read articles that claim that the students of today will have jobs in fields that don't even exist yet. That seems quite plausible with the rate of change in the world today. To not allow students to use all of the tools at their disposal and not training them to understand the social-media-rich world in which they live is a terrible idea.

Example - My niece had an iPod and a simple digital camera at age three and now, at the age of six, is begging for a BlackBerry because she uses her parents' to send emails to her friends on the weekend. This is the growing norm and we should not only accept it, but also adopt it and bring it into the classroom.

V. Teach With An Understanding of Today

The year is 2009. Just a reminder to everyone who thinks that using technology in the classroom is a big deal. It's not. Not using it is a big deal – and it is about time we change our attitude towards it. The students that walk into the schools of today are coming from a world that is rich with interactive experiences that come from their home life and their social life – school is where they need to be engaged the most – and yet I fear them looking at school as an interruption to their life. If you look at the modern student (on any grade level) they are immersed in a culture that speaks to them in rapid, flashy, interactive moments – video games, Social Networks, cell phones, and all the rest keep these kids connected and plugged in to a 24/7 network of communication and information. The access that they have to information is astounding and it seems to have been forgotten or ignored by schools.

Much of school, from my vantage point, still revolves around the ideal of a pitcher (teacher) filling the empty vessels (students). But the problem is that the vessels are not empty – they are online – they are connected – they are not the same students that our Educational system was initially designed for. Yet the system keeps pushing forward despite the dramatic change in our world.

You wouldn't brag about using chalk in a classroom, why would it be a big deal that you used an interactive white board in the classroom. It has been my experience that the teachers who successfully integrate technology in the classroom don't describe what they do as teaching with tech – they simply call it teaching. And it usually is the best teaching there is – seamless instruction that makes use of the tools in the lesson without making the tools the lesson.

Example – A teacher once complained to me about those “darned cell phones” and how students in her class are constantly on them during her lectures. I was invited to see this horrible scene for myself and so the next day I observed in one of her classes. Sure enough, most students were texting, updating their Facebook status, playing games, or checking various sites on their cell phones while she “taught”. What was her style of teaching – reading from the History textbook. She was teaching at them. What the teachers role is has to change – they can't teach at students anymore – they need to facilitate learning and there is a profound difference between those two things. When a teacher spends a forty minute period reading key facts from a book that the students can find online on any resource website in a more concise format from their phone or laptop then that information is not important. It is not learning, but understanding that is the key. Whether the lesson be about historical battles, character development, or how the human body functions, students should be constructing knowledge of the how and why and it is far more interesting, and dare I say more important in the grand scheme of things than just memorizing and regurgitating.

VI. Collaboration Is Key

Group work has been pushed as a key component to learning method classrooms across the country for decades. We almost force children to sit side-by-side and collaborate with one another in order to strengthen their problem solving and social skills. Now we are fortunate enough to be in a position to allow real collaboration that is not forced, but based on the idea that these collaborations are real-world experiences and have validity.

We have tools available today (many of them free) that can make this collaborative learning real. Wikis, VOIP (Skype), Real Time Collaborative Tools (Google Docs and sites like ShowDocument) provide students opportunities to work together in a learning environment that I only dreamed of as a child.

Collaboration is important and technology can make it more meaningful than ever before. This is a great way to work towards preparing for an inevitable skill that they will need to enter the workforce (or at the very least a skill they will need to excel in the academic arena).

Example – When I was in third grade we wrote letters to a pen pal. Mine was in Iowa and I remember that we exchanged three letters throughout the course of the year. We were doing a project on “Where People Live” and we had to ask questions of the student we were paired up with. I remember that the exchanges were all very trite and I hated to process. Today with E-mail you can communicate with students all over the world as many times a day as you would like. But Email is obvious and almost passé. Using free videoconference tools like Skype students can see peers from all over the world and have live interactive discussions with them. Complex interactive project work can take place online using things like Google Docs and provide students from all over the globe a powerful opportunity to truly know what it is like to work together to accomplish something of value.

VII. Schools Need Direction

The same way educators spend time thinking about a scope and sequence for their curriculum, the objectives of the academic course that the students will take, and the growth of programs and activities that they are running, is the way they need to think about bringing technology into the schools. It is not a one-time purchase of equipment, installation of software, or training of current staff. Based on what works and what needs work, choices have to be made about how to maximize the effectiveness of the school's educational technology implementation. Those who use it should evaluate all technology being used in the building. Did the Math department love the SmartBoards? Should more be ordered? Did the Science teacher feel that having a document camera was a benefit to his class? And if not, who would make better use of this tool? These are just a few questions that need to be asked about the technology purchases the school makes – but larger questions such as a plan of attack on how to train staff, grow a computer/laptop program (1:1) that will provide students with the most access, and offer high speed Internet to the entire school are things that need to be planned for.

Example – I have a friend that works at a school where a video camera was purchased for ten teachers. The cameras were state of the art and worked really well – but not with the laptops that the staff was using at the school. Because of this, special adaptors and cables needed to be bought to go along with the cameras. The money wasn't available the first year for these "accessories" so the cameras went unused for the year. The following year, assuming that the cameras were fine, the school bought five more along with their other technology acquisitions. The cables and adaptors again went un-purchased and the staff didn't use the cameras for a second year. By the time the third year rolled around and the problem was rectified, teachers were so averse to using these "problem cameras" that they were hardly touched from then on.

VIII. It's Okay To Try

Using new technologies in the classroom can sometimes be tricky. It is just like adding any new element into the mix of a classroom teacher's routine. Sometimes it is a natural and smooth transition, other times there are kinks that need to be looked at, evaluated, and either fixed or removed. Even for teachers that are skilled at seamlessly integrating the technology into their lessons there can be some stumbling blocks and sometimes a lesson needs to be tweaked. If a teacher was giving a "traditional" lesson without using technology and found it to drag or not work for some reason, he or she would undoubtedly think about what the problem was and try to do it differently the next time around. When technology is present in a lesson given for the first time and either something technical hiccups or the lesson doesn't yield the result that the teacher was anticipating, sometimes the technology gets blamed and is excised from the lesson.

If the lesson is not a success we as teachers need to evaluate it. What failed? Why? If the lesson could be taught just as well without the students being on the laptops or without the use of a SmartBoard, well that is okay – but if there were just some tweaks and changes that could be made to fix up the lesson for the next time, then it is certainly a more sound way to go.

Trying and failing is all right – just as the students are learning, so are teachers. But not using the technology for fear of failing is just as foolish as it sounds. Even the most experienced teachers hone their lessons and revise what has worked for them in the past to make the educational experience and outcome in their classroom more successful and it is imperative that all teachers approach educational technology with the same positive attitude.

Example – I was working with a teacher who had created a great web quest about pollution. She had spent hours working on it and when it was time to do it with the students she ran into a great deal of trouble. Many of the laptops were having problems connecting to the Internet. Becoming flustered and frustrated she vowed never to use the computers again and then sat the class down to listen to her read a passage about pollution in the environment.

It is a tricky situation to be in as a teacher. When things don't go as planned there is always a small sense of frustration, but we need to all keep things in check. For instance – Did the students learn about pollution, sure. But did they create their projects based on the knowledge they gained and the understanding that they created from the great resources that the teacher had hoped for them? Of course not. Always have a "Plan B". That is a safe bet for teachers regardless of whether or not technology is part of the lesson.

The Internet failed this teacher on this day at school, but by not allowing her students to experience the great project she devised or all that educational technology has to offer is failing them.

IX. Technology for Technology's Sake Can Be Worse Than No Technology At All

Technology is a tool and it needs to be used as such. When a student is doing a math problem that calls for a calculator that is the appropriate time to use one. When they are writing an essay on character development it is likely that the calculator is not essential and in fact is useless for the task. The same is true with technology.

When using an interactive whiteboard, document camera, or student response system can make a positive impact in the classroom; this is obviously the time to use it. But teachers need not infuse these elements forcefully into lessons that will not be enriched by them. The truth is that technology available today is very malleable and an interactive whiteboard or student response system is likely to be useful in almost any situation, but there are times when it is more effective to teach students without these tools and use a more traditional approach. And that's okay too!

Example – A teacher I was observing once asked the students to copy some information from the board in the front of the room as part of their Language Arts lesson. But instead of writing it in their journals or notebook folders, he asked them to get a laptop and write it into a Microsoft Word document. The material he wanted typed is irrelevant, but it was no more than two sentences worth and the computers weren't used again throughout the whole lesson. It took at least five minutes of this forty-minute period for the students to get to the laptops and boot them up into the Word processor. At the end of the period they spent five minutes shutting them down and returning them. It was a waste of ten minutes of the class. The teacher and I discussed his lesson afterwards and he was quite proud of the fact that "he used technology". Always remember that what benefits the students is the best teaching technique. A lot of the times technology can make a lesson better - but not always.

X. Understand buzz words and keep your finger on the pulse

Technology changes so rapidly in the world today that it is hard to keep up on all the latest and greatest devices, sites, and software. But we need to make a vow to know what's behind the terms being used in the field and promise to challenge what is being used today by seeing what will be available tomorrow. No one would like their teeth pulled with the tools a dentist used a hundred years ago. Why not? It still would get the job done. We would want the modern tools that have been tweaked over time to be easier, quicker, and better for the patient. The same is true of Educational Technology. If we keep using PowerPoint in the classroom and fail to explore the online options that make presentations not only easier to do but more visually appealing with the ability to be interactive as well, then we are not visionaries... we are stationeries. We need to be at least open to new technologies, especially ones that are already used by our students. We need to know what the current tools available to us are, what they can be used for, and most of all give them a chance and evaluate them to see if they can be effective learning tools in the classroom.

Example – Web 2.0 is a great example of the type of label or buzzword I mean. Educational technologists still have a hard time with the term. Some people scoff it off and make it seem like a passing fad (It's not! The term is a decade old.) And others don't know the difference between a blog/wiki/podcast/vodcast/social network, etc. The problem is that it is easier to not learn about Web 2.0's place in education than to explore the myriad tools that can fit the loose definition. I recently have begun to eliminate the term as a label because I really think that Web 2.0 is now referring to the Internet as a whole. There are few sites that I still use that are "Web 1.0" in nature, it seems that all webpages are now adding a social or interactive element to it and making the Internet as a whole a "read/write" environment. We have a great responsibility to provide the most useful and valid learning experiences for students. Ignoring these breakthroughs in technology is dangerous for education.