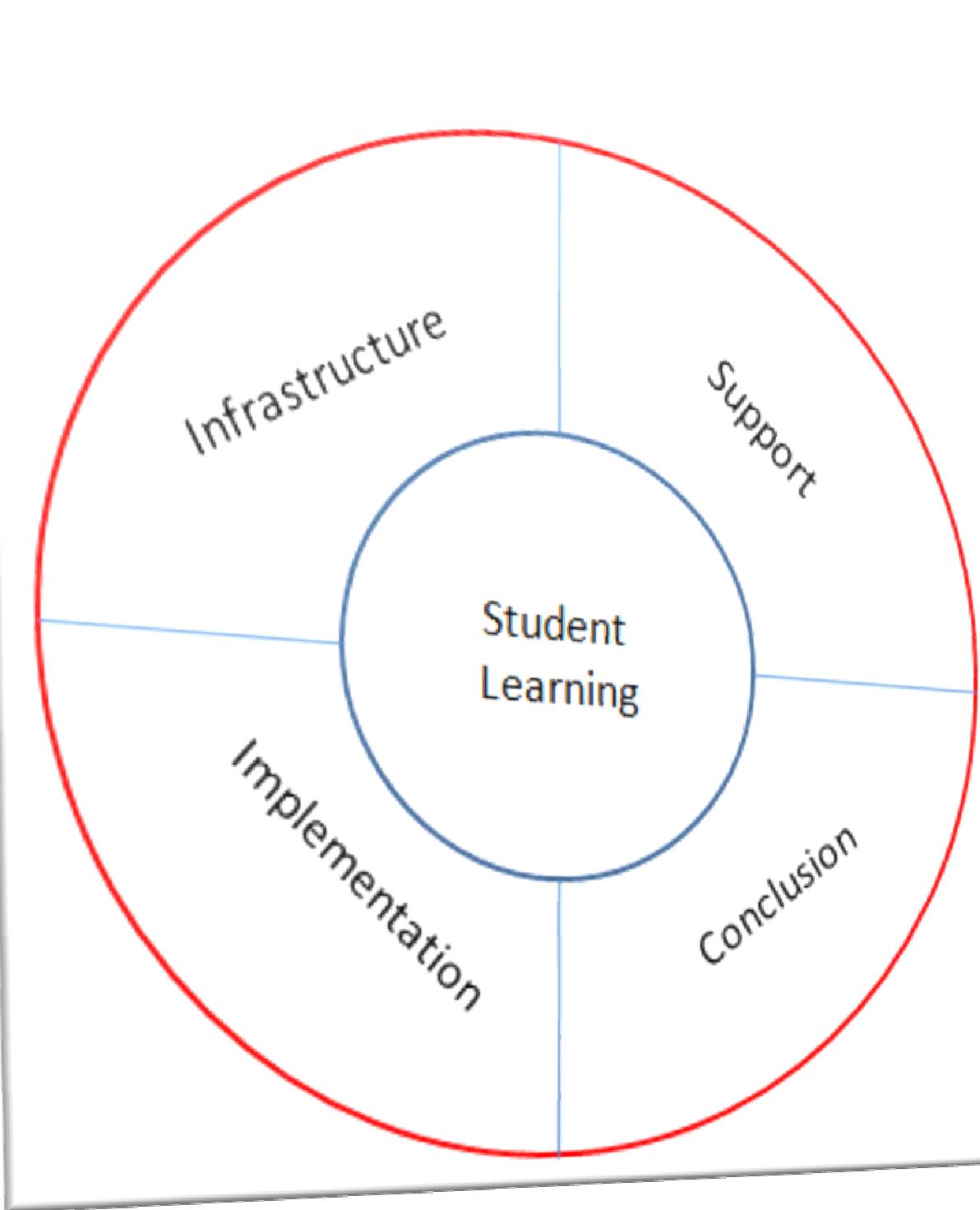


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Educational Portal

Original Blog post and comments

With the explosion of social networks and media sites for both teachers and students, schools are having to revisit their technology plans. They will also have to rethink technology's role within the wider school system. From lunch cards, to student databases that hold everything from addresses to nurse reports, technology is a part of our school system. With a computer on almost every teacher's desk, and overhead projectors slowly being replaced by LCD projectors, the technology revolution in schools is taking on a new face. Over the past decade, schools have purchased and implemented technology hardware at an amazing pace. Taking advantage of government and private grants, schools have found ways to wire themselves to the growing body of knowledge that is the Internet; they have adopted e-mail systems and internal communications to make the workflow of a school easier and more efficient. Yet we have seen very little affect on student learning. With the onset of Web 2.0 tools and an interactive World Wide Web, it is time to rethink how a school is designed. This outline of a technology plan looks at just that. It is based on an infrastructure that focuses on student learning and builds a system of support around our students. This design ensures that schools build a learning landscape that allows students to prosper in a new digital society.

The Circle:

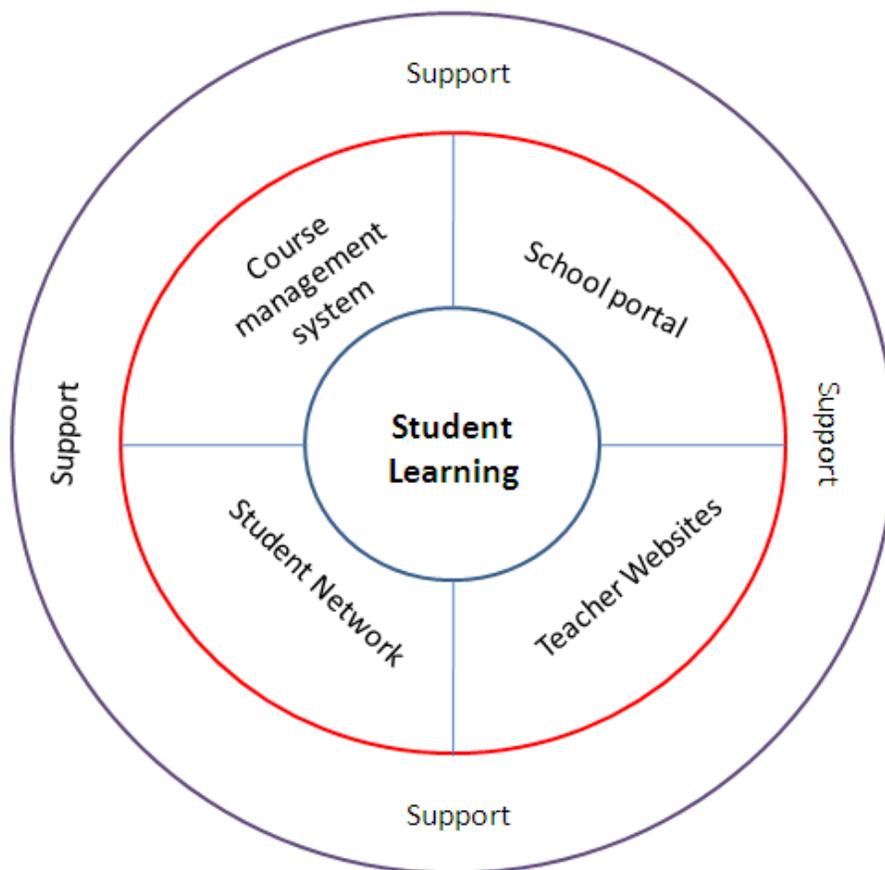


Figure 1

Student Learning:

In order to create a technology plan that supports student learning, we must first understand how students learn in this new digital landscape. We can look at the new Bloom's Taxonomy and George Siemens' Connectivism Theory (Purchase Knowing Knowledge for real in depth thinking). I believe these two documents, along with endless resources from the blogosphere and Ed Tech articles, can help any technology plan in defining why changes need to be made. These changes must focus on student learning and what students need to know for the future, A good tech plan should include a pedagogical theory of how the plan, and in the end the tools, are going to impact students. This is our goal as a school, to teach students and prepare them for their future. A tech plan should include a pedagogical reasoning for how these tools and new teaching and learning methods will meet those needs. Without a solid pedagogical section of the plan, I believe the plan cannot and should not move forward. It is in this section that you must have buy-in from all involved stakeholders (School Board, Superintendent, Parents, and Teachers). Without everyone on board understanding how technology changes the way we teach and learn, your plan already has a major strike against it.

Course Management System:

I believe every school should have some sort of course management system (CMS). Whether it is Moodle or Blackboard or something else is dependent on many factors. What is important is that this system needs to start and replace the school networks of the past. No longer should files only be accessible at school. By implementing a web based CMS, you can easily move all classroom documents into a web platform where PC or Mac does not matter, where anytime anywhere access is easily attained, and where assignments are easily tied to documents. Here is a rundown of things I believe a CMS should allow you to do:

- Be able to have both private and public sections
- Be able to scale to the size of your school
- Be able to allow for different assignment types (forums, chats, assignments, journals, etc)
- Be able to create weekly/monthly/yearly backups (daily if you would like)
- Be fast and reliable
- Be easy to navigate
- Be as cost efficient as possible

In the end, your CMS should take the place of file systems in the school. It should add the functionality to allow for students to interact and courses to have an online component if desired. At the very least, it should be used as a way to store and share files within a class, club, or community. The CMS begins to create a new web based information backbone for your school.

School Portal:

A school portal should be the homepage for the school. Some schools might opt to use the public side of their CMS to be their school portal while others opt for a separate system. Either way with your CMS being web based, linking the two can easily be accomplished allowing for overlap.

The school portal should be a public access site (although it too can have a private side) where the larger school community comes for information. The site must be managed by someone at the school and not by central administrators. Only by having the site managed locally can the site truly reflect the happenings at the school. The use of pictures, articles, podcasts and videos can all be used as evidence of student learning on the site. There are many open-source solutions that a school could use to set up a school portal and that would allow individual teachers to have a blog section where they can post happenings in their classroom. If a school wishes those blog posts can be promoted to the front page, making it rather easy to create a dynamic site where the content is constantly changing and up-to-date. For what I believe to be a good example of a school portal have a look at Tim Lauer's Lewis Elementary School site. This site is a Drupal install that is managed locally by Tim. Tim being the principal has local control over the look and feel of the site. In every job description I have ever seen for a principal position, somewhere it usually points out that they need to communicate regularly with parents and the community. I believe that Principals (Or V.P.) should be the gatekeepers to the school portal. Does this mean new communication skills for principals? Absolutely!

Teacher Websites:

The newsletter was the communication vehicle of the 20th Century. In the 21st Century, we need to move our communication to a more relevant form. Throughout the late 90's and into 2000 we pushed teachers to create web pages. I personally cannot recall how many training sessions I did using FrontPage, Dreamweaver, or a host of other web page creation tools. You had some teachers take to making web pages while others never grasped the concept of a well constructed web page. Add to that the fact that you also need to understand File Transfer Protocol (FTP) or some other web file hosting system and you can easily see how creating a web page becomes overwhelming.

But the tools are now ready. Web 2.0 has simplified the process to the point that I believe it is time to mandate a web page for each teacher. Now writing a blog post is easier and faster than writing and formatting a newsletter.

If a school adopts a school portal that has both a public and private side to it, setting teachers up with a login and a simple preformatted page is quick and easy. All a teacher needs to do is know how to type and upload pictures (if they so choose).

Another option is to have a separate install for teachers to house their sites. WordpressMU (Multi User) is a program that can be used for this. Although technically a blogging piece of software, it can easily be customized on a teacher by teacher site to run the way that teacher feels most comfortable. In the end, it is a simple piece of software that a school can house for use as a teacher website.

Student Network:

In the K12online pre-conference keynote, David Warlick talks about when students come to our schools we “cut off their tentacles.” It is time that schools understand the need for a student network that allows students to create personal learning networks and have a voice on the web.

Elgg: A social networking install that I think is showing a lot of promise. It gives the freedom that students are accustomed to in creating groups, and having 'friends'. The social network however can be controlled by the school and installed as part of the school's learning network. It comes with built in file uploading capability and a built in RSS reader. This allows students to start creating their learning networks that reach outside other students in their grade or school and into the world around them. As a school, you can decide to keep this social network private to only your school, or open it up and allow people from outside to view, comment, and learn from your students.

WordpressMU: Another option is a WordpressMU installation that gives each student their own blog where they can customize their online learning portal. They can upload and share documents and reflect on school work. It does not have all the social networking functions of Elgg but I believe it is a well supported program.

In the end, it does not matter what software platform you choose. What does matter is that you do not cut the tentacles off our students. Instead, we need to create learning systems that allow those tentacles to reach where we want them too. We can push and pull tentacles in the direction we want, but if we cut them off, they do grow back. Sometimes they grow back underground where we do not see them and have no idea where those tentacles are reaching to, who are they connecting to, and what they are being exposed to. Only by allowing the tentacles to grow within the school can we as educational institutions teach them how to use the network for good, how to learn from the network and how to make the network work for them.

Program Integration:

I mention different programs that I feel can be used to create a learning system for today's school. By no means is this list complete, but these are programs that I have personally tried or am using in my own development of a school wide learning network that focuses on student learning. I do not believe that installing all these programs is the answer, but instead looking at the different programs and figuring out how they can best meet your school's needs. I believe three programs from the list below can give you everything you need to create a complete learning and communication network for your school. Combined in different ways these programs can offer a customized learning platform for your school. The list is not a comparison of programs but rather a look at the functionality that each can provide for your school.

Different School setups that I believe would be successful:

Option 1

Drupal: School portal and teacher websites

Moodle: Student blogs and Course Management System

WordpressMU: School portal, student network, teacher web pages

Option 2

Blackboard: Course Management System

Drupal: School portal and teacher websites

Elgg: Student Social-Network

These are just a couple of examples of the setups that I believe could be combined to create an Educational Portal. Of course, these are not all the combinations, these tools can be combined in a multitude of ways. A school must take the time to research, experiment and design a system that best meets its needs.

School Wide Systems

Original Blog post and comments

Technology whether we like it or not reaches into everything we do in schools today. The Student Information Systems that run our schools hold more critical data than any other single program. As we design our school wide systems in the 21st Century, we must think about how all this information is connected, how and who needs access to what information and how do we make it available to them in as few clicks as possible.

The Circle:

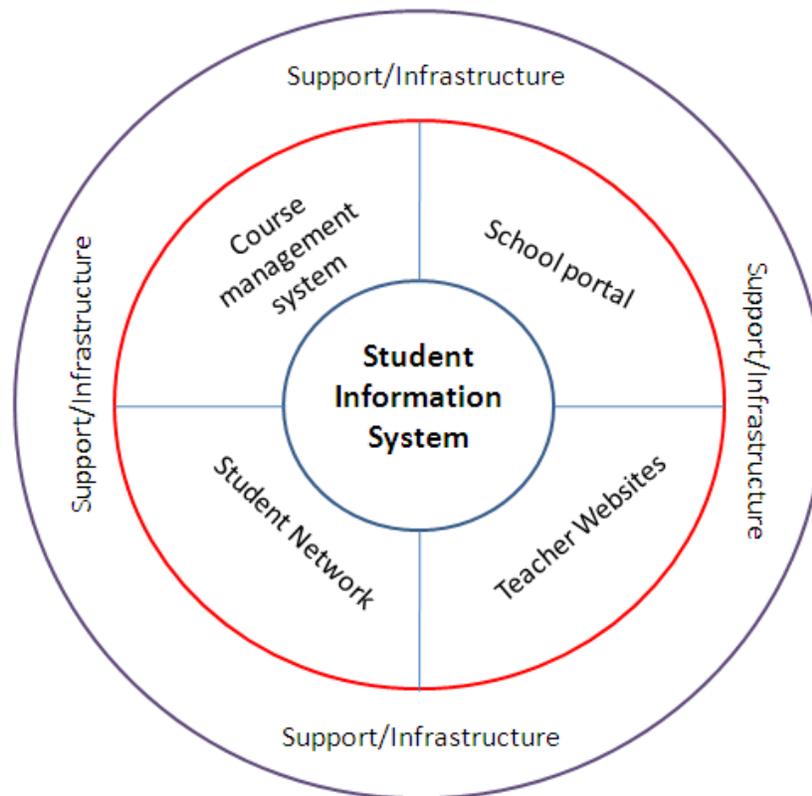


Figure 2

As you can see, not much has changed from the educational portal plan (figure 1) that focuses on student learning to the infrastructure plan (figure 2) for the school. We have replaced Student Learning with Student Information System. Just like everything we do, the programs we use, the way we manage the educational side of our technology, it all should revolve around Student Learning. From a school wide systems approach, we start with the Student Information System. This core piece of software will determine a lot of what we can and cannot do as we create a school wide system.

Student Information System

There are a number of Student Information or Student Management Systems available to schools. SASI, Admin+, and PowerSchool being just three in what is a long list of available systems.

This one fundamental piece of software can either make or break how the system as a whole works. I am not going to talk about any specific piece of software, but I want to put my thoughts out there on what I believe this software should do for the 21st Century School

Open Access:

First, I believe that the system must have an open database that allows a school to incorporate other programs into it to allow for a seamless system. A program built in a database like MySQL would allow easy integration into the educational programs we talked about in the Educational Portal section. By having an open database, a Student Information System (SIS) allows schools to customize their educational portal using the tools they want. Most programs today have a closed database, or a database created by them that does not work well with other programs. We need to break down these walls, use open systems and give schools the control they need to create a system that is easy, secure, and if possible gives ubiquitous access. These systems must be accessible and customizable.

(For more in depth thinking on this visit Tom Hoffman's post titled: Utecht et al on siss)

Ubiquitous Access:

In today's anywhere, anytime, learning environment, we want access to the information when we are not where the information is. In other words, you should be able to access anything and everything you want from an Internet connected computer. Student Information Systems of the future must be web based, they must allow teachers, parents and students access when they need it. Having a closed system that runs on closed applications should be a dying breed. Parents should be able to access information when they want it, students should be able to check grades from the lunch room, and teachers should be able to complete report cards on a Saturday sitting on their couch with their favorite coffee mug.

By making SIS web based, schools no longer need to worry about which platform their school is running (PC/Mac/Linux) or what are the issues if they decide to upgrade or switch platforms. The web browser is the single best cross platform piece of software. Teachers (for the most part) already know how to use it, and students and parents would require very little training as well.

We need to break down the walls of these programs, we need to make them accessible and integrated into larger school systems and we must be able to access them from anywhere.

All-in-one Solutions:

The Student Information System of the 21st century needs to be all-encompassing. No longer should schools have to sync information between programs. For example, teachers have a grading program that they have to sync with the SIS system. The SIS system then has to be synced to the web program that displays the information. This is time consuming and the syncing of these programs does not happen on their own, meaning we are using human resources on these functions.

SIS should have all of this housed within one system that is scalable to the needs of the school. A teacher should be able to enter grades into a web based reporting program. Those grades (if the school so chooses) should be accessible by parents and/or students without any other steps having to take place. A teacher should be able to take attendance and (if a school so chooses) have that information available to all parents via the web in real time. By setting up permissions, a school should be able to allow different stakeholders access to different parts of the system.

The SIS needs to be an all-in-one student information portal where all stakeholders can access the student information they need. One login, one access point to everything you could possibly want to know about your child, your student, your student body.

Integrated System:

By having a SIS with an open database and being web based, we make it easier for schools to create an integrated system of student information and educational access. Here's how I envision it:

Student:

Eva has a 15 minute break between classes. Just enough time to check and see if Ms. Galloway has posted the grades from her essay that she handed in on Monday. Eva fires up her laptop and browses to her school's portal. There she sees that tonight's varsity baseball game has been canceled....go figure after the three days of rain they have had recently. She logs into the system and navigates to her courses where she finds that Ms. Galloway has posted her essay grade. A 'B' not bad for a late night cram session. She moves her cursor over the grade and a bubble pops up with a comment from Ms. Galloway: "Good work! I think you should add this essay to your portfolio."

Eva decides that she'll add the piece to her portfolio collection now; knowing that she can later go back and either not include it as a final portfolio piece or write a reflection about it and turn it into one of her 3 pieces needed for English class. Eva quickly navigates to her portfolio, opens up her web folder and drags the essay from her desktop directly into her web folder through her browser. After the file uploads, a box pops up asking Eva to tag the essay with key words so that it can be found later.

With 5 minutes left, Eva checks her school e-mail real quick...nothing worth reading. She logs out and heads to class.

Parent:

Mr. Johnson is counting down the hours 'til 4 when he will be leaving work early to go watch his son pitch in the baseball game after school today. His son's first as a starting pitcher. He has been nervous most of the day...excited for his son and wanting him to do well. He is concerned the game will be canceled due to the heavy rain this week so he heads to the school's website where he sees a message posted by the AD that the game has been canceled. The nerves die down and sorrow fills his heart...he knows what this feels like and knows what his son must be feeling now. Oh well, at least it saved him a trip to the ballpark. While on the school's site, Mr. Johnson decides to login and check his children's grades. After logging in, he clicks on Paul's name and is instantly taken to a page that shows that Paul was present in all his classes today. He clicks on Algebra to see how Paul is doing. He knows Paul has been struggling with some of the concepts and wants to see how his grades are progressing. He quickly scans the grades and finds that Paul is pulling a B-. Not too bad! In the upper right hand corner, he clicks on a link that says "Student Blog" and is taken to another part of the website where he sees a list of reflections and other writings from Paul. He clicks on the category Algebra and starts reading. Getting an idea for how Paul is feeling about Algebra and where he is struggling. He is a typical teenage boy who does not talk a lot about school at home. Mr. Johnson finds it refreshing that he gets a glimpse into his son's thoughts through his school blog.

While logged in, Mr. Johnson checks on his 9th grade daughter Eva. He notices she got a B on an essay that was turned in earlier this week, which he finds strange because he does not remember her telling him she had an essay assignment due. He makes a note to talk to her when he gets home.

Before signing off, he can't help but head over to the sports section and once again watch the highlights from last week's game where Paul hits a double in the gap. All baseball games are streamed live through the school's web site and archived. A video class at school also takes each game and creates a highlight reel. At the end of the year the media class sells a DVD of all the highlights from all the sporting events throughout the school year. Mr. Johnson buys one every year and finds it a great way to document his children's athletic life through high school.

Teacher:

Ms. Power considers herself an average techie when it comes to computers. Although she does have this annoying technology coordinator at her school that is constantly making her think and stretching her to try new things or think differently about assignments.

It is early in the morning as Ms. Power gets to her classroom. She takes her laptop out of her bag and presses the power button. As she walks over to hang up her jacket, she flips the LCD projector on for the day. She remembers last year when the school installed it that she was nervous. She knew this meant that soon the school would be taking away her overhead projector and she was not very comfortable with that at the time. However, today she smiles as this year she did not even ask for an overhead projector in her room, in fact she did not turn the one on she had last year the whole second part of the school year and asked that they take it out of her room over the summer.

As she sits down at her computer, she starts her browser and navigates to the school's portal. There she is greeted with a message from the principal about happenings this week. She clicks on the calendar on the left and a new window pops up with a weekly view of after school activities and assemblies happening this week. She also notices a new podcast created by the 5th graders has been posted. She clicks on the link that reads "episode #10" and is taken to another part of the web site where she clicks play and listens to two students talking about what's happening in 5th grade this week. As the podcast plays in the background, she signs into the portal for the day. As she logs in, the sidebars on the portal change to reflect information for teachers. Under the heading "Reminders" there is a note from the principal that reminds her that there will be a Fire Drill at 1:30 today. On the left under the heading "Resources Needed" she notices that someone has posted in the resource forum looking for cardboard tubes for a project. In the middle of the page is a posting called "A Week Ahead" that the principal posts every Monday that gives a rundown of everything that is happening this week.

Ms. Power clicks on her link that says blog and begins to write today's outline in a blog post. When she finishes, she chooses who she wants to see the blog post. Students, Parents, Teachers, Public; there is also a button that says 'Promote to Front Page'. Every day a different teacher writes something for the front page of the school's portal explaining what is happening in their class. By taking turns, the teachers only have to post something about once a month.

But for today's schedule she just clicks Parents and Students. The blog post is instantly saved and she checks the LCD to make sure it is displaying properly on the whiteboard. She next clicks on the SIS link which takes her to the Student Information System. She loves this new system where she only logs in once and can access all she needs for the day. Once there she clicks on attendance and finishes preparing for her students to arrive.

These are just a couple examples of how a 21st century educational portal should work for all stakeholders. Information that is important to them, information they can access where they want when they want just a click away. We need to create educational portals like Amazon.com creates online stores: One log in to a vast amount of knowledge and resources. Everything you need in one integral system.

It would be great if there was one single system that did it all, but I haven't seen one yet. Other ideas to consider:

A Media Area:

If schools are going to block sites like YouTube and OurMedia then they need to give students and staff another way to post videos and podcasts. Schools should have their own media area for the community to use. Imagine the power of your school having its own YouTube type site.

Built-in RSS Reader:

If it was just there, just sitting in front of teachers and students, would they use it? Would teachers use it with students if it did not mean another username and password for both students and teachers?

Site-Wide Tags:

The system should use site-wide tags that allow you to find information on any tagged artifact from any part of the site you have access too. Think if a parent clicks on the tag 'Football' they could see articles written by both staff and students, they might find videos and podcasts from players, and maybe even a story from a 4th grader about playing football.

In the end, it is about access to information. The easier we can make the information available to those that need and want it, the better our 21st Century system will be received by all.

Support

Original Blog post and comments

Support Structure

You can have the best educational portal, and the best infrastructure, but if you do not have the support in place to both help teachers use/understand technology and support infrastructural needs then the money you spend on hardware will be lost.

Throughout the late 90s and into the 21st century, schools spent a lot of money on computer hardware and technology systems and infrastructures. Now that these systems are in place we must think and rethink the support needed to not only keep these systems up-to-date but also how it impacts teaching and learning in the classroom.

I wrote a post in June of 2007 where I outline a two prong approach to technology support in schools. Below is the diagram that I created to outline that support structure:

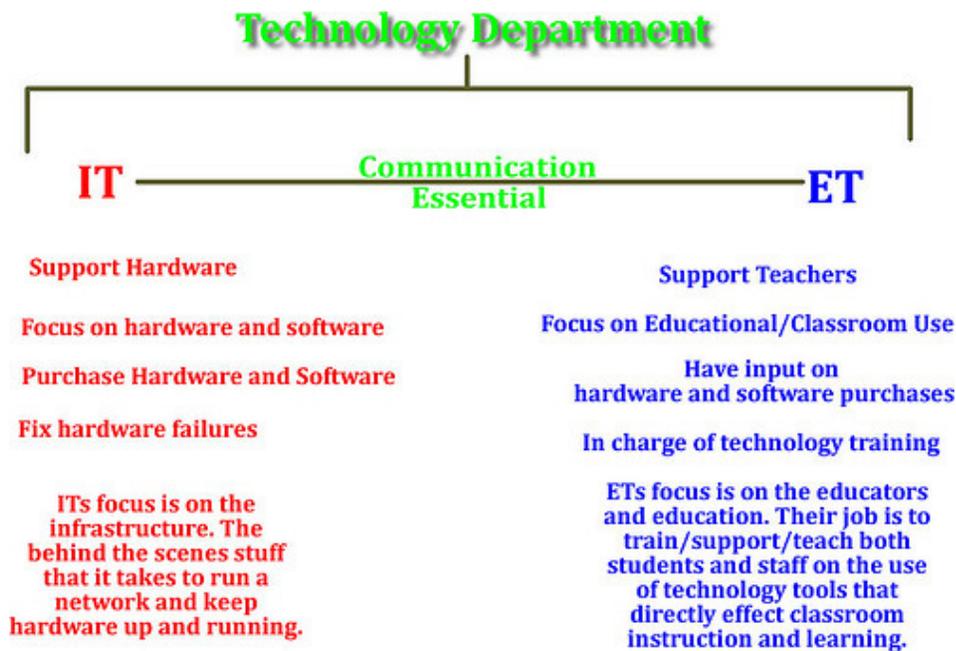


Figure 3

ITs (Informational Technologists): These people know networks, their job is to make sure day in and day out that the network is healthy. They focus on keeping viruses out, keeping computers running, and making sure that the overall school network is in place, up-to-date, and working.

ETs (Educational Technologists): These people know education. They will likely have had classroom experience and have been put into positions as ETs because of their use of technology in the classroom. Although they may be familiar with networks and the hardware of the school, their focus is on the tools, the learning, and the training to embed technology into day to day classroom use.

Schools began by hiring IT positions. People that can make sure that the network and computers are running. But many times these ITs are pushed into the positions of ETs where they may not have classroom experience, may not be up on new tools, new approaches, or new methods in teaching and learning in a networked classroom. ETs on the other hand are hired to help teachers and students learn the technology skills the district has adopted.

Today, I believe I was too narrow in my support structure, and the more I look at it, the more I feel I left out a key component. The media/literacy specialists are a key component in the support structure of the school's technology plan. I have reworked the image above to now include this new position.

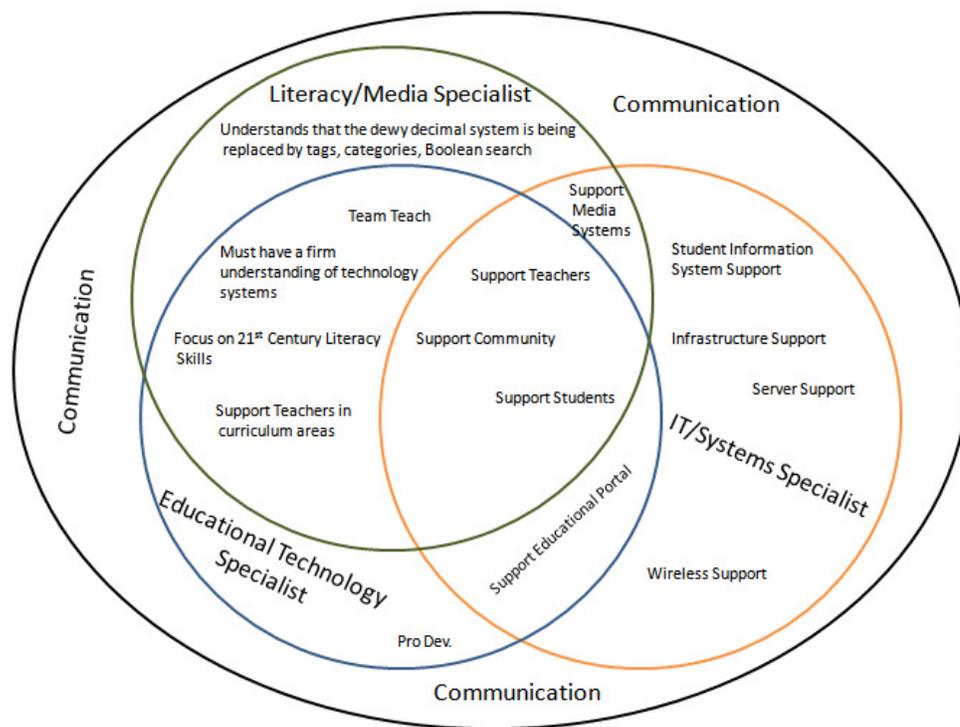


Figure 4

The Literacy/Media specialist is not a new position but instead an evolution of the librarian posting that today focuses not only on written text, but also on other information sources. The Literacy/Media specialist needs to be a specialist in the area of 21st Century Literacy skills and should be helping to teach those skills in the context of the media/library center. The Literacy/Media specialist must understand that the Dewey Decimal system is being supplemented by tags, categories, and Boolean searches. That is not to say that the Dewey Decimal system is going away, just that students today engage with information that is digital more than in print. They do Google searches before they check out a book. I am not arguing if this is right or wrong but do believe it just is.

Support Team

The technology support team is made up of Literacy/Media Specialist, Educational Technologists, and Information Technologists. It is the collective power of this team to work together to support the overall use of technology in the school. From professional development for staff, to teaching research skills to students, to making sure that the network systems are running smoothly. The communication between all team members is critical and if possible, I recommend having their offices within close proximity to each other. This helps to facilitate communication among all team members. We group grade levels or departments together in

schools so that teachers can support each other and work together. The same accommodation should be made for the technology support team.

Support Personal

Informational Technologist: I believe that there should be enough IT positions to support the school's needs. After doing research, schools have anywhere from 2500 students per IT position to 100 students per IT position. I think it depends on your school and your school's set up. If you are in a 1:1 laptop school, then more IT positions will be needed to be able to support the infrastructure needs of such a system. I also feel that each school should have an IT support person on campus. That IT support needs to be decentralized and that each school should have a dedicated IT person starting at 300 students. Three hundred students is a guide for many specialist positions within schools and I believe that same guide should be used when you are talking technology.

Educational Technologist: These positions are new dedicated positions that many schools do not have or are just now realizing that they need. A ratio for this position of 300:1 (Student: ET) I believe works nicely. This ratio allows the ET to support both the students and teachers in an embedded technology model.

Literacy/Media Specialist: Every school should have a Literacy/Media Specialist. I did a search on the American Librarian Association (<http://www.ala.org/>) website to try to find what they recommend as a student to librarian ratio and did not find a recommendation. No matter how you slice it, a school should have a Literacy/Media Specialist.

Therefore, a school of 300 students should have a support structure that looks like this.

IT: one position

ET: one position

L/M Specialist: one position

For a large high school of 2500 students or so the support structure would be:

IT: eight positions

ET: eight positions

L/M: one + position (to be determined)

Of course, I see this as a perfect scenario. Can schools afford that many positions? Probably not, but in a perfect world, teachers would not need this support if they were coming out of teacher training programs that focus on instructing teachers in how to use 21st Century Skills. Until that happens, these positions I feel are critical to schools as they continue to move forward in their use of technology as a tool in the classroom.

Implementation

Original Blog post and comments

When you get right down to it, all the technology in the world and the best support structure are nothing if you do not take the time to implement the technology in a way that supports the structure of the entire plan. The process of implementing your tech plan can have lasting consequences on the buy in you get from stakeholders. Implement the plan correctly and you bring the stakeholders and the system along at the same time. Implemented incorrectly you can end up alienating stakeholders or never fulfilling your tech plan's goals.

Most schools do not have the financial freedom to implement a complete technology plan in the span of one year. Therefore, schools are forced to implement new technologies, new plans, over several years. Let's face it, in the end it has to do with money. You need money to implement the tech plan. From switches and wires, to teacher training and support, it all costs money. Because schools are forced into multi-year plans, it is easy to get stuck in a routine of working on or focusing on one part of the plan without ever moving on. Infrastructure is usually where this happens. Schools decide they are going to focus on “upgrading their infrastructure” over a period of time. By the time they are done upgrading, it is time to replace the 3 to 5 year old equipment to meet new standards. In these cases, schools continually work on their infrastructure and never truly implement the technology into the school or classroom.

There are two things I believe can be done when creating a tech plan and implementing that tech plan. First, you must identify what it is you want end users to be able to do on a year-to-year basis. From there work backwards and create your infrastructure needs based on what you want teachers and students to do that year. Do not overbuild your infrastructure but instead build it to meet your users’ needs. Secondly, evaluate your technology and implementation plan on a yearly basis. You might create a three or five-year tech plan, but technology does not stand still or wait for anyone.

Start with the end in mind

Doug Johnson provides a nice visual of the different layers of technology needs in school. I like the fact that the diagram shows that it is the technology infrastructure that is the foundation on which to build. You cannot add hardware and software that your infrastructure cannot support.

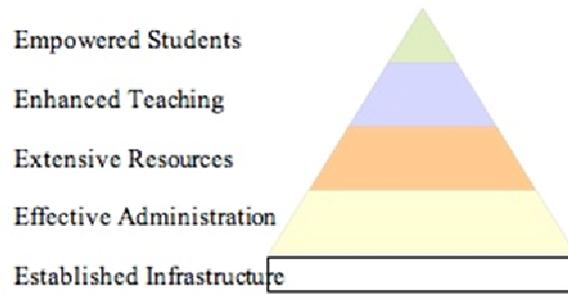
Mankato's Hierarchy of Educational Technology Needs

Figure 5

What I do not like about the diagram is that the use of a triangle depicts that the infrastructure must be wider than the student and teacher use at the top of the triangle. Although you do need a solid foundation I believe, your base should be in-line with your use. In other words, there is no need to have a base that is state-of-the-art if your users are only word processing. Build your infrastructure to support only what you need. So if I rework this diagram it looks like this.



Figure 6

In this way the infrastructure, resources, support, and outcomes are all in-line and supported by each other. We do not add more than we need, instead we build the system just large enough to support what we need. Once we understand that we are only going to build what we need instead of what we might need, we can then look at what we want students and teachers to do with technology and work backwards to make sure that systems are in place to support those outcomes. So over three years our plan looks like this:

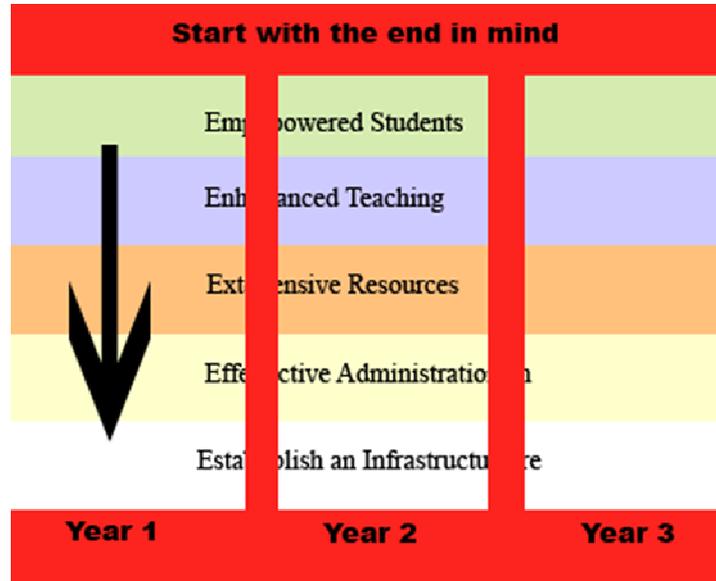


Figure 7

Even though the layers of support must be horizontal, the implementation of the whole system must be vertical. By implementing in a vertical format, each year sees added value to the end user. Allowing stakeholders to buy into a system and 'see' results on a yearly basis.

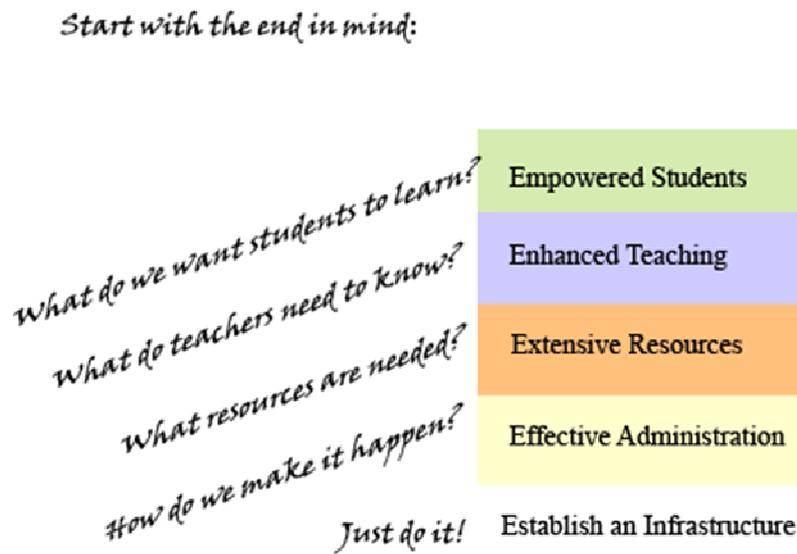


Figure 8

If a school only focuses on infrastructure, in many cases the end user does not 'see' results. A new server means nothing to a teacher. However, being able to work with new content or enter grades online does. By implementing the plan in a vertical way, we make sure that the user sees

results yearly. They see the impact the money and hard work is having on the education system as a whole.

In word form, it might look like this:

Students will learn: to upload multimedia projects to the web and embed them into their e-folios

Teachers will: be able to support students in the creating of multimedia projects and learn how to embed projects into e-folios

Resources needed: Time to train teachers, Time to train students

Infrastructure: Internet connection, server to house files, a way for students to upload videos and embed them on e-folios

Starting with knowing what we want students to do, we can work backwards to make sure we have in place the infrastructure we need to make this outcome happen.

Too often, we think horizontally when implementing technology. We cannot afford to try to think of everything we might need our infrastructure to support. Technology evolves too fast to try to guess what we will need. Instead, we need to start with what we want students to be able to do and build an infrastructure that will allow us to do that today with an eye on tomorrow.

By looking at technology implementation through a vertical lens, schools also can decide how much they can afford to do any given year. Each school's budgetary demands are different. Some schools might take smaller chunks of their plan than others based on the financial resources they have available. No matter what a school's financial resources are, by implementing in a vertical format a school ensures that the students are impacted in some way. That the end users are seeing results with the money and not just servers and wires in a locked closet.

Each school must decide how to best implement their plan, but by taking a vertical approach, you focus on affecting education and student learning. Again, keeping our focus on student learning from the design through the implementation stage is a key factor in successfully bringing all stakeholders on board with a 21st Century Technology Plan.

Conclusion

Original Blog post and comments

In the 21st Century, schools need to support locally but think globally. Schools must have a local infrastructure that supports learning but that allows students and teachers to learn and interact globally. Technology plans of the 21st Century must focus on student learning and continue to

ask the questions, “What do students need to learn and what skills do they need to accomplish that learning objective?”

If schools embrace the changes of the 21st Century: the skills, learning theories, and literacy students need to be successful, then creating a system that supports learning in this new digital age should be a top priority.

A 21st Century Tech Plan looks to bring people and resources together. A system that allows all school stakeholders to log on through a single system and access the information they need when they need it. It should allow stakeholders to communicate more efficiently. By creating a network of users, you allow them to connect to each other, forming relationships that are natural to students today.

Schools must embrace the changes that the digital age has brought. Schools need to understand that by not creating a digital landscape for our learners, we alienate them and miss opportunities to engage them in the learning process.

No tech plan is easy to implement. Technology is a moving target. A multi-year tech plan is really a year-to-year tech plan with a guide to the direction the school wants to go. This is why it is critical to meet the needs of the school today with an eye on tomorrow. A tech plan must be fluid, it must be adaptable. In the digital age, one skill that we must teach our students is to learn, unlearn and relearn information as it changes. The same is true with a tech plan. Build it, evaluate it, and revise it on a yearly basis. Good schools in the 21st Century will always have a three-year tech plan because they are constantly changing their end goals based on new emerging technologies. To say the programs that I have mentioned in this document are what a school should use would not be accurate. They are merely examples of programs that are available to schools today for little or no cost that would allow them to create a digital landscape ripe for learning, interacting, connecting, and conversing. What may be available tomorrow is anyone’s guess. Hence the need for a fluid plan that is open to revising and flexible based on the advent of new technologies.

The first step is to understand that when you put students at the center of your technology plan, teaching and learning changes. With an infrastructure and support model in place, and an implementation process that brings the school along in a vertical fashion so that all pieces of the plan are adequately supported, schools can change. Teaching and learning can and will change.

We are living in a time of rapid change. Our world continues to flatten and become more connected. Our students today already live and learn in this globally connected world. It is our responsibility as educators to prepare them for that connected future. Before that can happen, we must engage students in their learning spaces. A 21st Century Technology Plan puts in place a system that allows teachers to teach successfully and allows students to engage in the learning process. Only then can education continue to move forward with society into a globally connected, digital future.