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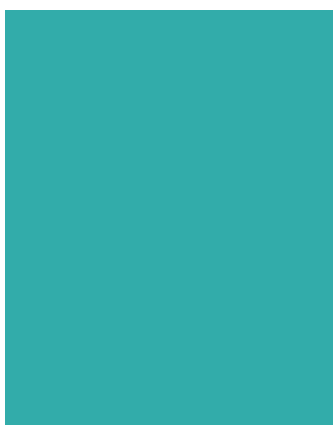
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Handhelds and TSSA: Using Handheld Computers to Improve Productivity and Professional Practice in School Administration

by *Bruce Benson, VSTE Journal Editor-at-Large*

Today's handheld computers are much more than yesterday's personal digital assistants. They are so powerful that school administrators can easily use these ultra-portable pocket devices in meeting many of the Technology Standards for School Administrators, particularly in focus areas related to productivity and professional practice, support, management and operations, and assessment and evaluation.

What do administrators need to get started? School leaders will need a handheld device, a cradle that attaches to their desktop computer for synchronizing information (generally included with the device), and a collapsible keyboard for ease of entry in already familiar desktop-like applications. There are technical considerations in choosing a platform (Pocket PC or Palm), but similar productivity applications are available on both, so administrators should make sure to check with local tech support staff regarding what is best for their particular environment.

Handhelds can be used to model routine, intentional and effective use of technology by giving administrators a very visible and reliable tech tool that can be used to improve productivity in a variety of settings. Handhelds allow administrators quick access to schedules, tasks and contact lists.

Tom Nash, Director of Special Education and Student Services for Albemarle County Public Schools, is a relative newcomer to the world of handheld computing. However, he has been quick to incorporate many of the basic applications into his daily routine, stating,

I enjoy my handheld. I have easy access to my schedule, contacts and email, all in one place. And it was easy to learn. Press a button and the data in Outlook on my desktop is copied to my handheld.

Handheld Computers, continued

As a result, Nash has purchased Palm handheld devices for all of his central office administrators.

Administrators can use handhelds to improve communication and collaboration with colleagues, staff, parents, and students because they can draft and respond to emails at any time in any location. The messages are sent the next time the device is placed in its cradle.

Handhelds can provide administrators immediate access to data and information to support instructional practice. Kevin Castner, Superintendent of Albemarle County Public Schools, carries school performance data on his handheld Pocket PC. Castner comments:

> When I visit schools to discuss progress during the current year, I can access that school's student progress data on my handheld. We are a data-driven school division. Having school performance data at my fingertips elevates the level of conversation with principals, We are going to make this technology available to all of our principals with funding available through principal participation in the Virginia Initiative for Technology and Administrative Leadership.

Handhelds can also be used to help administrators manage documents and resources. Regina Kirk, Albemarle's division Coordinator for Health and Physical Education, remarks about her handheld Pocket PC:
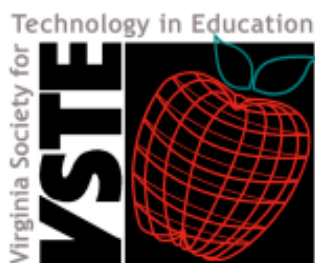
> It's my brain. It keeps me organized. I don't have to search through a thousand papers looking for a certain document. I have a spreadsheet on my handheld that I use to track special PE equipment loaned to schools. Wherever I am, I know where our equipment is as well.

For some administrators, handheld computers have become a critical component of their administrative toolkit. Vicki Crews Miller, Principal of Murray High School in Albemarle County, uses her handheld Palm device throughout the day, in many different capacities:

> I carry it with me wherever I go. When I'm in the hallway and a student asks to schedule a meeting, I do it right then and there on my handheld. I have a senior checklist and SOL verified credit information on my handheld for every student at my school. I also have student contact information, so if I need to contact a student while I am at home, I have all the information I need.

Miller also uses her handheld to take notes during teacher observations. She has a spreadsheet on her handheld with all of her school's financial information. Miller even has her school's entire school improvement plan on her handheld. When the superintendent visits with his data in hand, she has her data in hand as well.

According to Miller, using her handheld during meetings has really increased her productivity.

Handheld Computers, continued

I use the word processor on my handheld and a collapsible keyboard to take notes during meetings. If I am asked to do something during a meeting, I simply add it to my task list on my handheld. If there is something that comes up during the meeting that I need my office associate to do, I write the email on my handheld and it is automatically sent when I put my handheld in the cradle back in my office. I don't have 20 sticky notes to follow up on after meetings anymore. I take my handheld everywhere. I have a case that holds both my handheld and keyboard. It fits easily in my purse. I even took it on vacation with me. Not bad for someone who had never used a handheld until six months ago. It was just so easy to learn how to use.

The notion of what is a computer is going to be challenged in the next couple of years. Devices like handheld computers have a lot to offer administrators, and they hold great promise in improving productivity and professional practice, putting communication tools and data in the palms of administrators' hands.

Article Resource URLs

Technology Standards for School Administrators
http://cnets.iste.org/tssa/

Palm
 http://www.palm.com
   (various companies make handhelds with the Palm operating system, such as Palm and Handspring)

PocketPC
http://www.microsoft.com/mobile/pocketpc/default.asp
   (various companies make handhelds with the Pocket PC operating system, such as Compaq and HP)

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Using Web-Based Research Activities - CyberHunts, WebQuests, PBL++MM: How Do You Choose?

by *Jill Baedke*

As a technology instructor for several schools, I am invited into classrooms to observe lessons and offer suggestions for technology integration ideas. During a recent visit to one of my schools, I was approached by a teacher who was excited about using the Internet with her third grade class. She used the term "CyberHunt" several times to describe how her class accessed a site and then found information for a question written on the board. She had the sites bookmarked for each question, and the students would go to the site and find the information. I congratulated her success with this first-time endeavor, and we made plans to meet soon so that I could share more techniques and ideas.

While sharing this lesson with another teacher, I was asked if it was actually a CyberHunt or just another Internet activity. This question started my thinking about web-based activities. What exactly is a CyberHunt or Scavenger Hunt? How does it differ from a WebQuest? What does "PBL+MM" mean? How are web-based activities the same or different? Why would a teacher choose one Internet activity over another?

After researching and examining the CyberHunt, WebQuest and Project-Based Learning plus Multimedia (PBL+MM) definitions and lessons, I found that there were many similarities. Each web-based project focused on a selected Standard of Learning (SOL), used the web for resources, and allowed for the students to construct their own knowledge. However, there were some significant differences. Let's start with the simplest lesson: a teacher-directed introduction to an Internet activity.

Introduction to Web-based Research

A common introductory lesson for a web-based research activity would be a simple question-and-answer activity where the teacher would supply a web site address and the student would explore a simple page. The technology objectives

Web-Based Research, continued

may include linking, learning how to move back and forward between pages, and doing a key word find for information. The students would build their skills and competencies for navigating a web site for information while answering a content specific question or providing a definition. Once the students are comfortable with manipulating a site for information, they could then advance to the next step: the CyberHunt activity.

CyberHunt – Scavenger Hunt – Web Hunt

A CyberHunt is an Internet activity that focuses on gathering information from web sites to answer questions or to support a concept on a particular theme or content area. The typical CyberHunt activity comes in the form of a question-and-answer graphic organizer. Most teachers in elementary school start with a paper and pencil organizer (worksheet) for the final product. As students become more proficient in computer skills, the teacher may introduce the concept of multi-tasking, where the students toggle between the Internet and the digital worksheet to enter the information. In either case, the intent is to "hunt" for facts or information to add details for the answer to the question. The questions themselves may vary from the simple fact or statement to the more complex, depending upon the age and skill level of the student. By completing CyberHunts, students learn how to navigate a web site, scan a page for detailed information, and then apply the facts or ideas to the question. A CyberHunt is an excellent way to teach beginning Internet researching skills.

When creating the CyberHunt, the teacher uses web sites to support the curriculum focus. The instructor has control over which sites have the best information to answer the questions and the students use only those sites in the activity. The students do not spend time using search engines or directories to accumulate endless websites that must be accessed, assessed and evaluated. Instead, students use their time to navigate one site for the information. The CyberHunt lesson is streamlined to a simple fact-finding activity. For this reason, the typical activity takes one or more class periods to finish.

There are no firm CyberHunt rules about the number of sites, the type of questions, or the amount of activity time to be allotted. CyberHunts have been created in all shapes and forms and for all grade levels. They cover most subjects and have no set time limit. The teacher has control over the sites, the type of questions, and the final product.

For an introductory lesson for a second grade class, one teacher laminated a simple five-question worksheet in the shape of a crossword puzzle. One site was set up in the browser with the questions being visual as well as factual. The students used a washable pen to write their answers. When finished, they compared their answers to a posted answer sheet and then wiped off the sheet for use by another student.

Teachers are also using the Personal Toolbar folder (Netscape Communicator) or Favorite Links (Internet Explorer) to make links for the web sites being used for their Internet activities. These sites can be removed from the special folders and replaced with another set depending on the activity. Students are then limited to

Web-Based Research, continued

the sites that can be seen in the toolbar. This is especially useful for students in the lower grades who may become confused with a bookmark list of sites or with using a menu bar for drop-down choices.

CyberHunts are simple to make, popular with teachers and an easy way to introduce the Internet to the students. There are thousands of Hunts on the web that are content focused and grade level specific. Additional CyberHunt information, as well as a template and storage space for teacher made CyberHunts, can be found at the site listed at the end of this article.

WebQuests

In 1995, Bernie Dodge and Tom March developed a format for web-based lessons and named it "WebQuest." In a WebQuest, students are given a task or problem to solve, using the Internet as a source of information. They define the WebQuest as "…an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet…" (1995). A well-designed WebQuest has six elements:

- Introduction – for background information
- Task – a fun and thought provoking activity
- Process – the steps and guidelines for the activity
- Resources – teacher directed sites or materials
- Guidance – suggestions by teacher
- Conclusion – final product and closure

The WebQuest may be either a short-term or long-term activity, depending on whether a finished project will take several class periods or several months. In either case, the six elements are the building blocks to a well-rounded activity.

To create a WebQuest, the teacher starts with the curriculum and then introduces the background information. A task is proposed that would motivate the student and support the curriculum. Teacher-selected web resources and additional materials are given to the students to help them formulate a solution to the task. In the Process phase of the WebQuest, the teacher may distribute a numbered guide or a timeline of deadlines to keep the project moving forward. The WebQuest is finally evaluated with a product such as an oral report, skit, multimedia presentation or graphic. In the Conclusion phase, the group sums up, reviews and reflects on the topic.

A WebQuest is more involved and detailed than a CyberHunt and is usually introduced to students who are more comfortable with using the Internet and assessing web-based information. Whereas a CyberHunt may only ask for a single answer to a question, a WebQuest uses higher-level cognitive skills and problem solving techniques. Pre-selected web sites are the main source of information, although the teacher may suggest some outside materials.

While the finished product in a CyberHunt is usually a graphic organizer, the finished product in a WebQuest is in the form of a presentation. The students' final projects may be in the form of a report, poster, skit, slide show, etc. Students may work alone or in cooperative groups for WebQuest activities.

Web-Based Research, continued

In a WebQuest, several web sites are used as the primary means to construct a body of information for the finished product. Students learn how to analyze and compare different resources of information, apply the information to a solution and then demonstrate understanding by designing a final product.

Examples of WebQuests:

Elementary: You are asked to invent a machine that helps you do chores around the house. Use at least three simple machines to make your invention; then draw and label the parts. Advertise your invention on a poster and present to the class. (Web-based resources provided by teacher)

Secondary: Analyze the data from information about the sinking of the Titanic and submit a report (slide show) on ways to avoid the same disaster in the future. (Web-based resources provided by teacher)

Project Based Learning plus Multimedia (PBL+MM)

Project Based Learning plus Multimedia is similar to a WebQuest in that it builds from a curriculum concept, actively involves students to solve a problem or task, and allows for students to construct their own knowledge. The final project or activity is an assigned multimedia presentation such as a PowerPoint presentation or video. However, there are several differences between a WebQuest and a Project Based Learning activity. In a WebQuest, one's main resources are web-based, and the task presented may be whimsical or imaginary. In a Project Based Learning activity, the resources are broader in scope, and the task (project) is based on an authentic, real-world problem.

The Buck Institute for Education (2002) has developed a model for Project Based Learning and has an excellent site that describes PBL in detail. A well-planned PBL activity has four defining elements:
- Content – real-world question that "hooks" the student;
- Conditions – expected behaviors of students such as teamwork and task-and-time management;
- Activities – investigative and engaging using real–life resources and technologies;
- Results – real-world outcomes that are presented using multi-media presentations, models or reports.

To create a PBL+MM activity, the teacher again starts with the content objective and creates the "hook" that motivates the students. Students are put into groups to conduct both web-based and traditional research in order to find possible solutions to their task. The PBL+MM allows for more freedom for the students to explore and construct their own knowledge base. Each team plans their own strategies, explores sources of information and formulates their own end results. The teacher is the guide and supports the team's efforts. Since the Condition phase is an important part of the project, student groups are expected
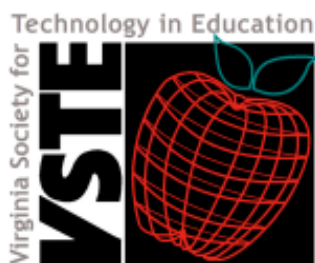
Web-Based Research, continued

to self-evaluate their progress, monitor performance of the group, and work together as a team for a final project presentation. There are several suggested rubrics for this phase of the activity posted at the Buck Institute for Education web site listed below.

The Activity phase of a PBL+MM may take several weeks or months to complete, depending on the project. During this time, many other content skills are embedded in the process and evaluated, such as note taking, discussing, graphing results, writing summaries and presenting information. Students also take advantage of traditional resources, such as videos, interviews, guest speakers, experimental research, field trips and more.

A PBL+MM, by definition, requires the final project to be in a multimedia format such as a movie, PowerPoint presentation, HyperStudio or other multimedia software. In the Results phase, the students present and defend their solution to the project to their peers.

The differences between a WebQuest and PBL may be puzzling at first glance since both are project-oriented and both use the Internet to obtain information. The WebQuest, although project based, is limited in its inquiry in that the information resources suggested by the teacher have already been established and published. The WebQuest, by definition, does not account for the students to experiment or establish new resources outside the references suggested. Students are limited to the web sites approved by the teacher so that the final product reflects only the information on those sites.

The PBL activity has the potential and latitude to include not only accomplished resources but also student-directed research to solve the given task. In a PBL, students could survey, experiment, tally, observe, interview and brainstorm countless other ways to reach their objective. Also, supportive technology is not limited to Internet resources but may include other areas such as special software, digital cameras, probeware, scanners, calculators and more. Both activities allow for creative problem solving, but the PBL challenges new ideas and investigations.

PBL Examples:

Fourth Grade: Henricus is the second settlement in Virginia built to rectify the many problems not anticipated at Jamestown. As a real estate agency, your group must create a one-minute iMovie advertisement to "sell" your new community. Which job skills and types of people would you need to make Henricus a strong settlement? Resources: web-based, field trip, interviews and surveys. (Example from Longdale Elementary School, Grade 4, Henrico County)

High School: Social Security will go broke by the year 2025 if it remains as it is. An Advisory Council on Social Security cannot agree on what to do to extend and expand Social Security. You will be a part of the Advisory Council's decision-making team. Some of you will be working with State representative, Jerry Weller from Illinois. (Example from the Buck Institute of Education)

Web-Based Research, continued

Table of Comparisons

	Student Outcomes	Time	Resources	Final Product
CyberHunt (Introductory Internet lessons)	-Navigate a web site -Scan for details -Apply information	- One class to several class periods	-Teacher-selected web sites	- Graphic organizer (worksheet, puzzle, word search, etc.)
WebQuest (Extending Internet skills)	-Compare web sites -Evaluate information -Apply information -Design a finished product	- Several class periods to several weeks	-Teacher-selected web sites -Teacher-selected outside resources	- Visual presentation (report, poster, play, slide show, etc.)
Problem-Based Learning plus Multimedia (Applying resources to an Authentic Real-world Project)	-Assessing multiple resources -Applying facts to problems -Synthesizing information -Evaluating process and project	-Several weeks to several months	-Teacher or student-selected web sites -Outside resources (field trips, surveys, interviews, reports, experiments, etc.)	- Multimedia presentation (PowerPoint, HyperStudio, movie, slide show, etc.)

Conclusion

How does a teacher choose from these three web-based activities? In order of skill acquisition, the CyberHunt gives the students the opportunity to learn introductory Internet skills while integrating the content curriculum. If a student needs to practice linking to web sites, scanning for details and answering factual questions related to content, then a CyberHunt is a perfect match. If a student already has these introductory Internet skills, then the next step is the WebQuest. A well-made WebQuest broadens the Internet activity to include many web sites that result in a student-created product for assessment. The Project Based Learning plus Multimedia is the most involved activity in that it requires higher-order thinking skills and allows for students to demonstrate their knowledge and skills in multiple ways.

With the infusion of technology and Internet access, teachers now are committed to guiding elementary and secondary students to use the Internet in a responsible and productive way. Choosing the best web-based activity depends on the teacher's objective and the students' abilities and skills. Choosing the right content-focused activity can be as easy as surfing the Internet for established lessons or creating one that matches the curriculum. With the right project, these web-based activities can lead to establishing life-long information-gathering skills.

Web-Based Research, continued

Article Resource URLs

Cyberhunts
http://www.kn.pacbell.com/wired/bluewebn/

WebQuests
http://webquest.sdsu.edu/

PBL+MM
http://www.bie.org/pbl/

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The Vanguard of Change: Teacher Leadership in Technology

by Chad Fairey

The Technology Coordinator (as it is called in one of its multitude of incarnations) of a school bears a truly Herculean load. Part-time troubleshooter, part-time curriculum specialist, part-time administrator, and full-time superhero, the Technology Coordinator is charged with a baffling assortment of tasks, roles and responsibilities. In addition to maintaining an expansive infrastructure of technologies, the Coordinator proudly accepts the mantle of responsibility of integrating this technology into the school's instructional program. Schools and school districts across the nation continue to struggle with the boundaries of the Technology Coordinator's role, yearning for an emphasis on staff development, curriculum design and instructional leadership. Often, the Technology Coordinator is a department of one and accepts this mantle of leadership while moonlighting as the "electronic janitor." The coordinator's superhero powers are frequently enlisted to tame a savage printer, conjure up network connectivity or bestow the blessing of software upon a deprived workstation. As the vanguard of change, this solitary figure often feels the frustration of trying to leap over tall problems in a single bound.

Fairfax County Public Schools (FCPS) recognizes the vitality and sustaining force of localized change. If the instructional culture of a school is to be truly transformed and infused with perpetually changing technologies, then the instructional centers of the school must be the focus, i.e. Classrooms. Teachers must not only be the targets of change but also the agents of it. The Technology Coordinator must act as "first among equals," forming the first member of a leadership team that will sustain the force of change. This concept finds life in the "Vanguard Technology Integration Team" model, a district-funded initiative that supports and sustains technology reform in the middle schools of FCPS.

The Vision of Change

Originally, Fairfax County Public Schools created the Vanguard Technology Integration Teams at each of its 23 middle schools to design and implement a technology staff development program. The district initiative supported the schools by:
- providing technology planning guidelines and templates
- providing funding for eight teachers to plan or conduct staff development sessions three days per academic year

Vanguard of Change, continued

- opening the lines of communication between district-level specialists and the eight members of the Vanguard team (via the technology coordinator)

Glasgow Middle School, a Fairfax County middle school of approximately 1200 students and 123 faculty members, has been implementing the Vanguard model for the past six years. Over this period, this model has evolved to include increased levels of teacher leadership in technology integration. In addition to assisting with the delivery of staff development, the Vanguard leadership team has become an architect of school technology policy, a strategic planning body, a technology support infrastructure and agent for change in the classroom.

A Dozen Extra Pairs of Hands

In the 2000-2001 academic year, Glasgow Middle School decided to redistribute district funding to more appropriately reflect the team structure of our school. Core curriculum is delivered via a structured teaming model at Glasgow, and the isolation of individual teams is both a benefit and challenge. While the Vanguard Team could easily point to some school-wide changes, they also recognized that significant change would more likely happen at the most local level. If waves of technology integration were to ripple throughout the school, they would start with the teams. The group also recognized another undeniable truth: technology integration was irrevocably tied to the success of technology troubleshooting and maintenance. If the technology was not working, integration was unlikely to happen.

Every academic team sends one teacher as a representative to Glasgow's Vanguard leadership team. The Technology Coordinator facilitates in-house staff development opportunities to prepare these leaders to provide quick, on-the-spot troubleshooting support for their individual academic team. The end result is that these teacher-leaders serve as a first line of defense for technology troubleshooting requests. Abiding by a firm "ten-minute rule" (since the Vanguard members are classroom teachers, they are instructed to spend no more than ten minutes on a particular issue before sending the request along to the Technology Coordinator), the Vanguard member offers teachers a local resource that can be tapped into relatively quickly and easily. As a result, the volume of troubleshooting requests that make their way to the Technology Coordinator is considerably lower than it would have been otherwise. The Technology Coordinator, staring at a mountain of requests in the face, has now been granted a dozen extra pairs of hands. Individual teachers at Glasgow embrace this model; when a technical issue arises, they have a technology leader close at hand who can immediately work to remedy the problem. Resolution time for technical problems is cut considerably.

The Great Divide

The communication divide can often grow to overwhelming proportions. The Vanguard team has increased the quality and frequency of communication one hundred-fold. Since each team of teachers is represented on the school's Vanguard leadership team, the Technology Coordinator has a reliable network through which communication is easy, fast and accurate. Through meetings, both real-time and virtual, the Technology Coordinator can disseminate critical

information (such as changes to network logons) to the entire school in a very compressed time-frame. The communication divide has two precipices: frequency and quality. Vanguard teams help negotiate the problems of communication in that regular, two-way interaction is greatly enhanced when a teacher leadership team is in place. Faculty concerns easily find their way back to the Technology Coordinator via the in-school liaisons.

From the Horse's Mouth

Research clearly shows that teachers prefer staff development by an expert teacher who has demonstrated mastery of content and strategies. (Futrell, 1995) The Technology Coordinator, while wise and knowing about things technical, is essentially a curriculum generalist. One of the most effective products of Glasgow's Vanguard program is a relevant staff development model that puts classroom teachers in touch with those who have successfully integrated technology with instruction. At the outset of the year, the Vanguard team designs a long-range staff development plan that offers a broad range of opportunities. In addition to targeting a variety of ability levels (entry-level, advanced, etc.), the program also targets a variety of uses (productivity, integration, etc.) and disciplines (social studies, science, etc.). The teacher-leaders truly shine here, empowered with the opportunity to craft staff development based on their mastery of technology and a specific discipline. Using several venues – department meetings, team planning times, one-on-one tutoring – these teacher-leaders provide relevant staff development that is centered upon the strategies and issues of a particular content discipline. District-funding is especially helpful here; the teacher-leaders use substitute funding to provide time for co-planning and co-teaching with other teachers in their discipline.

The Leadership Council

Teacher leadership is most crucial in long-range planning and development of policy. In addition to enlisting the daily assistance of teacher-leaders for staff development, communication and troubleshooting, the Technology Coordinator should establish a roundtable where s/he is truly "first among equals." Glasgow's Vanguard team is the architect of school technology policy and a long-range planning body. The group meets three times during the academic year for strategic planning, but does not hesitate to call an impromptu meeting to resolve a pressing issue. The Vanguard members have equal voice, and group consensus is the order of the day. Members become leaders, setting agenda items and moving the discussion in a particular direction. For the Technology Coordinator, this teacher leadership is critical to success; often, Vanguard representatives uncover issues or possibilities that were completely hidden from view. Operating in a sphere outside of the teams, the Coordinator needs the eyes and ears of teacher-leaders to assess the needs of the school.

Looking Back

Enlisting teacher leadership is the best decision that a Technology Coordinator will ever make. The benefits have been briefly outlined here, but the reality is a transformation of the culture of the school and the role that technology

Vanguard of Change, continued

will play in it. The caveat is, naturally, that it takes time. Glasgow has implemented the FCPS Vanguard model for the past six years, and only in the last two have the lasting benefits become readily apparent. Even though the school's technology inventory has nearly doubled in that time and troubleshooting requests seem more voluminous than ever, the focus on instruction has never been stronger.

References

• Futrell, M.H., Holmes, D.H., Christie, J.L., & Cushman, E.J. (1995) "Linking Educational Reform and Teacher's Professional Development: The Efforts of Nine School Dstricts." Available: http://www.edpolicy.gwu.edu/resources/linking/paper_a_d.html

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Leaving No Child Behind in the Digital Age: Technology and High Quality Instruction

by Cindy Richardson

The classroom of the 21st century is composed of students from many different cultural, ethnic, and economic backgrounds demonstrating a wide range of abilities. One of the greatest challenges facing educators in inclusive classrooms is differentiating and delivering instruction for students with varied abilities and experiences in a way that enables all students to succeed in the general curriculum. While technology and digital resources have made their way into classrooms, many educators have yet to take full advantage of the richness of these supports. Often, technology is seen as a separate activity that has been forced upon educators instead of a universally designed tool that can catapult student learning and achievement when effectively integrated into the curriculum.

In the *No Child Left Behind* legislation, not just availability, but integrated use of technology in curriculum and instruction is seen as an essential prerequisite for increasing student achievement. As noted by drafters of this law, technology can only be an effective solution to the challenge of student achievement if it is made an integral part of the learning process. Therefore, a key element of NCLB is a new educational technology initiative — *Enhancing Education Through Technology*. The goals of this initiative are to:

- Improve student academic achievement though the use of technology in elementary schools and secondary schools.
- Assist students in becoming technologically literate by the time they finish the eighth grade.
- Ensure that teachers are able to integrate technology into the curriculum to improve student achievement.

In addition, several components of the NCLB act allow schools to purchase technology resources to support program goals.

Why has technology been identified as a critical component for ensuring that no child is left behind? Computer or digital technology (tools that provide opportunities for the learner to customize and/or interact with the content by manipulating text, sound, images, or video) is the one universally designed curricular tool that can be customized to support the needs of a diverse student population. The traditional curriculum, consisting primarily of textbooks, worksheets, teacher lectures, and paper-pencil tests, leaves many students unable to engage with the material. Indicative of a "one size fits all" philosophy, the rigidity of such an approach almost guarantees that only a small percentage of students will grasp and

Leaving no child behind, continued

apply knowledge to the extent educators desire using traditional instructional methods and materials (Rose & Meyer, 2002). Consider, for example, the number of students with learning disabilities who are forced to extract meaning from text they cannot read, much less understand, or students with dysfunctional handwriting or spelling who cannot begin to compose a simple paragraph. Although accommodations such as providing notes or reducing work assignments may be helpful at times, to rely on these supports instead of providing students with tools that would allow them to engage with the material in a meaningful and productive way may prohibit the long term gains we desire.

Assistive technology has made it possible for students whose disabilities prohibited their participation in or engagement with typical curricular tasks, such as reading, writing, or oral communication, to engage with the content and respond in a manner that demonstrates competence. While these tools have made it possible for many students to be included in the general curriculum, they are sometimes seen as appropriate for only the neediest of students. In fact, an ever-growing number of students identified as being at risk for failure or whose performance suggests that they are struggling with a curriculum delivered under the traditional model otherwise are often denied access to such supports that could ignite and transform productivity. Likewise, students who are currently using assistive technology as a tool to access a traditionally delivered curriculum are still unable to achieve when technology is fully integrated into the methods and materials used to present information, apply concepts, and foster student engagement. The concept of a universally designed curriculum in which technology is not only available, but is embedded in the instructional methods and materials used to teach all students, has been the focus of research by the Center for Applied Special Technology (CAST).

New brain research reveals that the capacity to learn is not inherent, but rather is determined largely by an exchange between the learner's abilities and the tools and activities in which he or she engages (Rose & Meyer, 2002). Three unique and interconnected networks in the brain help the learner recognize patterns and analyze information, plan and execute strategies, and identify and determine priorities. The application and effective integration of technology affords students with disabilities, as well as their non-disabled peers, opportunities to not only learn essential technology skills valued by potential employers, but also to access, comprehend, and apply content knowledge in meaningful ways. A compilation of studies conducted over the past decade confirm the fact that, when integrated into the curriculum and coupled with active learning strategies, technology can have a dramatic impact on student achievement (Moursund, Bielefeldt, & Underwood, 1997; Stites, 1998).

But how can we effectively integrate technology into the curriculum when many of our classrooms have only one or two computers available? The following examples illustrate how the computer, with appropriate software, can be integrated effectively into the curriculum.

As a Presentation or Teaching Tool: (usually used with a projection unit such as a TV, overhead, or video projector)
- As a tool to help students visualize abstract concepts
- As a tool for presenting new information or clarifying concepts
- As a tool for activating prior knowledge
- As a tool to assess student learning

Leaving no child behind, continued

- As a way of modeling software use
- As a way of learning content-related strategies
- As a way of modeling the art of writing
- As a way of linking with projects (e.g., webquests, virtual field trips, experts) for project-based or collaborative learning activities

As a Platform for Small-Group Learning:

- As a tool for exploring concepts (e.g., simulation of science experiments or mathematical concepts)
- As a link to online reference materials and resources
- As a tool for problem solving and decision making
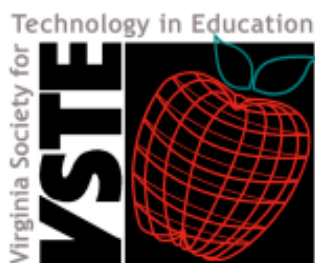- As a resource to plan, design, and showcase learning (project-based assessment)

As a Tool for Individual Student Use:

- As a venue for accessing or engaging with the curriculum
- As an alternative format for an activity (e.g., test, worksheet or experiment)
- As a tool for enrichment
- As a tool for remediation or skills practice

When integrating technology into the universal design of the curriculum, particularly with limited time and resources, the following ideas may be helpful to educators:

- Talk with or observe other educators who are already experiencing success with integrating technology into the curriculum.
- Develop a detailed plan of how the technology and activity selected will support the identified curricular objectives.
- Show one or more examples of what a successfully completed project might look like before introducing a project or assignment to students.
- Model, model, model…Use a single computer attached to a large-screen projection unit to teach students every skill they need to know to complete their project successfully. With the class, complete an assignment from start to finish to demonstrate effective ways of organizing, developing, and creating a project.
- Use cooperative learning strategies while still maintaining individual accountability.
- Develop and share with students a timeline for all project segments so that the project continues to move forward in a timely manner.
- Identify offline activities to supplement technology in the event that it becomes unavailable before or during a scheduled activity, or when groups have to rotate their use of the computer.
- For resource material on the topic of software selection or integrating technology with project-based learning, request one of the corresponding Considerations Packets advertised on the T/TAC William and Mary web site.

In recent years, technology has opened the door for many students with disabilities to enter the general education classroom. However, its isolated use to assist students in accessing a traditionally delivered curriculum falls short of achieving the gains possible when technology is embedded in the learning process and materials used with all students. The challenges educators face in providing instruction for a diverse and ever-changing

Leaving no child behind, continued

population, coupled with the increased emphasis on accountability for student achievement, make technology integration into instructional methods and materials imperative if we are to comply with the mandate to leave no child behind.

Article Resource URLs

No Child Left Behind
http://www.NoChildLeftBehind.gov

Center for Applied Special Technology (CAST)
http://www.cast.org/

T/TAC at William & Mary
http://www.wm.edu/ttac

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About the Author

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If you come softly:
An online novel study

by Sharon Hurwitz and Sigrid Bomba

How many times have you felt that you were being treated unfairly because of who or what you are? Believe it or not, all of us have experienced the same feelings at some point in our lives. We are going to ask you to read a novel about a couple of teenagers who face prejudice, which eventually changes their lives. As you read this fictional novel, we will ask you to complete some activities that will help you analyze the novel as well as the motivation behind some of the characters' feelings. Your final activity will be to create something that can be used to help stop the prejudice we see in today's society.

These were our words to the students as we began our first foray into virtual instruction for students. In Hampton, Va. we have come a long way with online instruction over the past year. One year ago, we had one teacher and one staff development coordinator who had the vision to use the power of the Internet to teach in a different way. With a trial version of Blackboard and a year of training under our belts, we began teaching teachers to develop short courses for staff development. Within one year, we went from one four-week course to thirty courses, ranging from two weeks to seven weeks in length.

Expanding On-line Instruction

This fall, we began looking for ways to expand our online instruction – to include students as well as our teachers. Including narrative literature into our content courses is, and has been, one of our major areas of the School Improvement Plan. Understanding the fact that some of our reluctant readers are more at home in a virtual setting than in the classroom, we decided to move a novel study into the virtual arena. Sigrid had been awarded an International Reading Grant for integrating narrative and expository text in previous years. For these reasons, a novel study was our natural choice.

We know that the reading process is the academic core of education. At the high school level, narrative literature, along with reading instruction, typically resides exclusively in the English classroom. Additionally, we know that students are diverse in their reading preferences. Some students prefer the narrative text, where they readily identify with characters and assimilate information at a higher rate than if they were reading an expository text. Expository texts rarely require the student to connect emotionally to the content of the course. Textbooks offer data without the nature of human relationships. Expository texts also offer one perspective without the richness of diverse cultures. For these reasons, we were anxious to offer our students an opportunity to participate in a language-rich course where
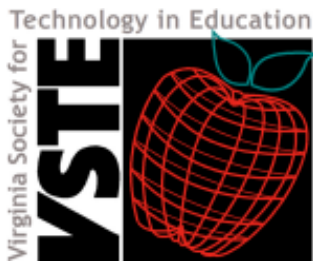
Online novel study, continued

narrative and expository texts were fused. But we were limited because neither of us has a classroom with students anymore. We knew we would have to find a teacher who would be willing to use our project with his or her students.

Establishing Goals and Objectives

So how did we decide who would be the audience for our project? We sent out a message to all the teachers in our school telling them that we were interested in doing an online student project and we got back several responses. A business teacher intrigued us with her situation: two small classes of multimedia/desktop publishing and the added enticement of having special needs students. What more could we ask for?

We approached her with the plot for a novel that was important to both of us. *If You Come Softly,* by Jacqueline Woodson, is a young adult novel told from the viewpoint of a bi-racial couple. We asked if she would support having the students read the novel and complete a number of projects, all of which would fit her competencies. She was willing, and we got to work.

Our formal objectives were mostly from the English Standards of learning:

Students will:
- identify the characteristics that distinguish literary forms.
- use literary terms in describing and analyzing selections.
- explain the relationships between and among elements of literature: characters, plot, setting, tone, point of view and theme.
- explain the influence of historical context on the form, style, and point of view of a written work.
- read and follow instructions to use computer software, assemble, or construct models or equipment, or complete a project.
- use writing to interpret, analyze, and evaluate ideas.

We meticulously read the novel several times and divided it into sections. We wanted students to read a section (1-3 chapters) and then complete a project that would fit the competencies of the multi-media/desktop publishing course. We also required that they participate in a discussion about what they had read as they went along.

The Syllabus and Student Work

Introduction
Just as the book begins with an Introduction, so should you. In the book's introduction, we learn many things about the plot and the characters. Read through the Introduction and decide what we know about them. Then introduce yourself with a picture and personal profile.

Online novel study, continued

Discussion Board Student Entry:
I'm kind of anxious to get started on this book, seeing as how I'm a little behind. Since this story is a bit of a love story, I'm sure it'll be pretty interesting. At least, I hope so.

Chapters 1 and 2

The first two chapters introduce the two major characters and their similarities as well as their differences. As you read these chapters, you will describe what you learn in an illustrated T-chart, created with Microsoft Office.
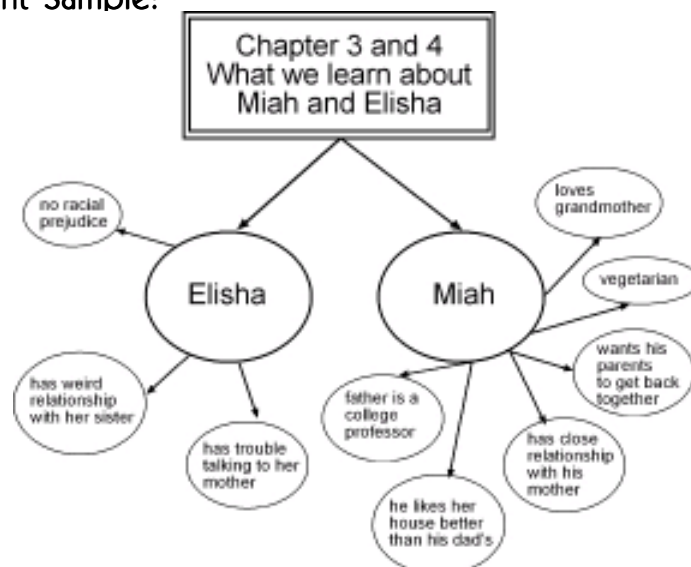
Discussion Board Student Entry:
Chapters one and two are interesting. When I started to read chapter one I figured it would be about Jeremiah and chapter 2 would be about Elisha. Which that is how they were set up. I figured that he would be into basketball. Elisha and her mother are similar in the sense that they both look out the window and see that they are not living like they would like to. The mother would have liked to live life a little longer as a teen than to have to grow up so quickly with marriage and being pregnant. Elisha would like to hang out with her female friends more and to find a good friend to talk to. But, she does not fit in right off because she is keeps to her self, it seems. I think Jeremiah has a close family and Elisha's family is not so open. So far, the book is all right.

Chapters 3 and 4

Characterization is important in all stories, but there are many different ways to tell us about characters. In chapters 3 and 4, we learn about the main characters by learning about the secondary characters. As you read these chapters, you will use *Inspiration* to create a graphic organizer showing your notes.

Student Sample:

Online novel study, continued

Discussion Board Teacher Entry:
[Students have read that the two main characters have fallen in love.] So many times, in our own lives, we dream that everything is perfect. Then, slowly we realize that there are problems that we either chose not to see or couldn't see because we were blinded. Have you ever heard the expression, "Love is blind?"

Discussion Board Student Entry:
Yes I have heard of "Love is Blind" I heard this saying everywhere. I think a lot of people are blinded by love. Some people just chose not to see things but at times they do or someone tells them, the person who is in love tries to make it seem like that person is so good or act like the things that person did was nothing because they don't want to leave their love and they don't want to be lonely. Some just cant let go.

Chapters 5 and 6

In chapters 5 and 6 we learn even more about our two main characters. While reading these chapters, we will begin a vocabulary log and the initial stages of writing summaries.

Discussion Board Student Entry:
The theme is going to be the acceptance of different types of relationships. All relationships will be different. They will consist of different shapes, colors, and sizes. Not every person will date a white if they are white or Asians just dating other Asians, and so on and so on. People will date whom they like and whom they want. This is showing that people are not different and others have to deal with the fact that not everyone will think like you. They will end up going out with each other.

Chapters 7 and 8

One of the best things about reading a novel is finding ourselves. Sometimes we see ourselves in a character or in the way a character reacts to a particular situation. Other times, the setting of a story will bring back a childhood memory. In this section, you will create a Table with information.

Discussion Board Teacher Entry:
I have also experienced some of this situation. When I was born, I was not born Jewish. I met my husband when I was 28 and decided to convert to the Jewish religion for him. He didn't care that much, but in the Jewish faith, the children are not born Jewish unless the mother is Jewish. It is a "matriarchal" society - the mother determines the faith of the child. So, I decided to convert so our children would be Jewish. I'm glad I did, although my own Christian family had some problems accepting my decision.

Online novel study, continued

Discussion Board Student Entry:
Wow, that must have been tough. I can relate to this novel in some way, I may not be white but I am mixed. I am a quarter Filipino, black, Spanish, and Indian it's like I have to go through the same situation that Jeremiah and Ellie had to face. One time I was involve with this boy who was half Puerto Rican and black but his mother was pure Puerto Rican. She wanted him to be with a Puerto Rican girl and I thought that it was wrong because me and her son was very happy, but she didn't like the fact that I wasn't pure Puerto Rican. It really doesn't matter what kind of race you are or skin color racism will still be a main factor or just discrimination it's self.

Chapters 9 and 10
Some people are lucky; when they read words, they see images in their brain. This means that the right side of their brain is working with the left side of the brain (the right = visual images while the left = words). In this section, you will use clip art to illustrate your notes.

Chapters 11, 12, and 13
Here's your challenge! Take these three chapters and write a 20-word summary.

Chapters 14, 15, and 16
Now here's where you'll need your vocabulary log. You'll need a minimum of twenty words, and you will use *Inspiration* again to create a different type of graphic organizer.

Discussion Board Student Entry:
Stating that this book has a deeply motivating and self-capturing story that makes you think about your own life. I think that's when a book does its job; when you stop reading for a second and think about your life or something about that book that just makes you wonder...

Chapters 17, 18, and 19
Unfortunately, prejudice has been a problem throughout American history. As you read these three chapters, think about the different types of prejudice you've read or heard about. Then, you will conduct research on the Internet and create a hot list showing what you have found.

Chapters 20, 21, and 22
Authors use descriptions of places and locations to tell us about their characters. In these chapters, you will take notes on the homes of the characters in a three-column table.

Online novel study, continued

Chapter 23

This chapter contains the climax of the novel - the point to which the author has been leading the reader for the entire book. You will use *TimeLiner* (software) to create a plot line of events leading to this point.

Discussion Board Student Entry:

I think what happened to Miah makes you reflect on how hard and unfortunate life can sometimes be. Everything could be going great, and next, things just turn sour and go bad. That's why it's important to live every moment to the fullest. I read in a book somewhere about a person who had a near-death experience. Afterwards, that person decided to live everyday like it was her last because she had no idea which day would be her last. I think that's a good way to live.

Chapters 24 and 25

For these two chapters we will create a memorial using clip art from either the internet or software located in the library. You will need to channel the emotion of these chapters into your creation.

Discussion Board Student Entry:

I lost my grandfather, both actually. I was kind of young though and I wasn't that close to either one of them so I didn't really have but so much grief over it. I was very sad and time to time I think about both of them and sometimes I try to remember what I can about them. The worst thing about their deaths, is the fact that both of my families kind of fell apart. Especially, the wives. One of my grandmothers is still suffering from being a widow. They had been married for a long time and together even longer and my grandfather, both grandfathers, were very good men. It's hard to let love go. You want to hold on to love forever and when it's over all you can remember is what it meant to you and how it felt to you to be loved and to love.

Chapter 26

In this last chapter of the novel, we realize that Ellie is still "haunted" by the memory of Jeremiah. You will write an unsent letter, either for her or for yourself.

Discussion Board Student Entry:

Simply we can all get along in this world. This book is the key to peace among minorities. The book tells you, you have to give respect to get it. To me it also tells in life there are no stop signs. So why fight over something like racial prejudice? The book's message is the two couples that are black and white, if they can get along so can everyone else. There is nothing wrong with interracial relationships. People have a lot of nerve thinking you have to be the same color as a another just to have a relationship with that person.

Online novel study, continued

Final Project

In this final project, which will count as a grade all by itself, you will create an iMovie showing the consequences of prejudice, which we will broadcast on the HCS school channel.

Assessment of the Project

As a part of our assessment, students were given a survey highlighting key components of the course such as length of the course, choice of novel, preference of activities, and preference of methodology (On-line vs. classroom). We were extremely pleased with the results. Most of our students preferred the use of the narrative text rather than following textbook assignments to complete their Desktop Publishing course requirements. The Discussion Board proved to be the favorite among the students. They enjoyed the casual interaction and the opportunity to discuss the novel with a deeper understanding.

When we ran the course this time, we limited it to one teacher and two classes. Being the technology-driven, devoted-to-reading teachers that we are, we assumed that, as soon as the teacher and the students started the project, they would willingly jump into the discussions about the novel and they would love doing all the projects. Just as you would expect, the reality was quite different. The students were not happy that they had to read at all – "This isn't an English class; you can't make us read." And they looked at us as if we were crazy – "You aren't even our teachers; what makes you think you can come in here and give us all this extra work!" These quotes summarized the general feeling of the students.

But we plugged on, coming into the classroom at least five different days, walking them through logging into the site and participating in the discussions, making sure that they knew what they were supposed to do. Of the eleven students who continued with the project (one dropped out of school; one moved; and one just refused), they all participated in the discussions regularly with insightful postings.

So, what did we learn from having this first online novel study? We learned that we need to turn the project over to the teacher in the classroom and not be the ones seen as the leaders. But we did enjoy getting back into the classroom and developing relationships with the students. One girl visited us before the Christmas break to give us candy canes, while another shared some of her "secret poetry" that she had been writing.

This first experience with a student online course was an interesting and exciting change for the students and for us. We look forward to expanding online options for the students in Hampton.

Article Resource URLs

Inspiration
http://www.inspiration.com/

Timeliner
http://www.tomsnyder.com/classroom/timelineronline

iMovie
http://www.apple.com/imovie/

References

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www.vste.org

Data Warehousing and Decision Making

by William Flaherty

C an you show standardized test results by certain groups of students for multiple years? Can you provide each teacher with past standardized test results for each student in his/her classes? Can you provide each student with a realistic prediction of what GPA and SAT is needed for admission to certain colleges? If your district cannot allow all administrators to quickly and easily produce the answers to these questions, you might be interested in a new technology now available to schools that can do this and much, much more! This technology is called data warehousing.

An Introduction to Data Warehousing

Hanover County Public Schools (HCPS) has created an Instructional Decision Support System, IDDS. This system combines information from many disparate data systems and incorporates them into a common repository that is available to administrators throughout the school district. The student information system is linked to attendance, discipline, grade point average, transcripts, standardized tests and student surveys.

The data warehousing movement began with a book by Bill Inmon in 1992, *Building The Data Warehouse*. Inmon's definition of a data warehouse is "A subject-oriented, integrated, time variant, non-volatile collection of data in support of management's decision-making process." The last part of this definition should be the most appealing to school administrators today, all of whom are in the midst of high stakes testing and school accountability. The next wave of reform will certainly be data based decision-making. This is a natural evolution that will assist administrators in making decisions for the right reasons. Until now, school leadership has not had the necessary tools to analyze the vast amount of information that is generated from one set of standardized tests. This task grows exponentially when one attempts to examine multiple years of data, multiple tests, specific groups of children, special programs, attendance, discipline, teacher training, etc. The proper data warehouse solution can allow one to easily sift through all this data with a few clicks of a mouse.

A view from the balcony of a data warehouse reveals different data sources (main student database, state standardized tests, Stanford tests, SAT, ACT, district generated data) feeding into a robust database housed on a powerful server that is accessible to administrators throughout the district. The final key component is a user-friendly interface that will allow non-technical people to easily access the information from their computer. Due to recent advances, this solution now has a price point that is affordable for most school districts.

Data Warehousing, continued

Data Warehousing in Practice

Hanover County Public Schools' quest began in the summer of 1999 with a simple School Board goal: "Promote instructional programming in the following areas, among others: …implications of longitudinal assessment of student achievement." This mandate lead to the formation of a committee chaired by the school superintendent, Stewart Roberson, which examined means of attaining this goal. The composition of this committee consisted of a school board member and members from both the instructional and technology organizations within the school district. David Papenfuse, Assistant Superintendent of Finance and Technology, and Lloyd Jones, Assistant Superintendent of Instruction, headed the team from technology and instruction respectively. This make-up was of vital importance to the success of the project. The data warehouse was operational by the summer of 2000. Virtually all administrators in HCPS's nineteen schools and central office were trained by December 1, 2000. HCPS had the in-house expertise to maintain the warehouse and support the user base.

HCPS took very deliberate steps to accomplish this in a short time frame. These steps included evaluating database software for the warehouse, selecting the database software, training of technical staff for both the database and the data warehousing features of the database, evaluating the end user software, selecting software; training of technical staff in installation, setting up and securing end user software, establishing focus groups with principals, surveying potential users, introducing the Instruction Decision Support System at the annual administrative retreat, and training of administrators. Although all steps were necessary, it was particularly important to involve administrators in the process and to incorporate their suggestions as we developed this information delivery system. HCPS administrators were anxious to have a solution that would aid in the arduous task of examining our state standardized tests.

School districts receive a "composite score" and "individual skills tested scores" for each student. An example of this would be the composite score for the fifth grade math test and its skills of computation and estimation; measurement and geometry; probability and statistics; patterns, functions and algebra; and number and number sense scores. With the new data warehouse, a principal can generate a report in minutes that will produce averages, minimum and maximum scores for the composite and the five categories. The drag of a mouse enhances this report so that it can be examined by gender, socioeconomic background, disability, or any other indicator that is in the database. Stephen Goldsmith, principal of Washington-Henry Elementary School, is examining the Stanford test scores of fourth graders to see if they can be predictors for students at risk of failing Virginia's fifth grade state tests. His plan is to tailor his school's curriculum and special programs to meet the needs of these students. The data warehouse technology allows him and his staff to provide customized curricula according to the skill level of these students. Carol Cash, principal of Lee-Davis High School, provides her Algebra II teachers with a roster of their students with their Algebra I composite scores and all its scores by skill from the state test. This gives the Algebra II teachers a good indication of the skill level of each student in the class. Cash generates these reports in approximately 10 minutes.

Data Warehousing, continued

Required Technology and Training

The two key pieces of software that HCPS selected for this project are Microsoft's SQL Server 7.0 and Business Objects. This month the district will upgrade SQL Server 7.0 to SQL Server 2000. The end user software is called Business Objects (see the end of this article for the URL). Our district believes that it is imperative to the success of the project to have a person dedicated to the building and maintenance of the data warehouse. The training received by the technical staff was invaluable.

The district trainer developed an initial two-day module, complete with manual, for the district administrators. This training was customized to allow each participant to use school data to develop custom reports for his/her educational practices. At every training session at least one participant exclaimed that he generated a report in ten to fifteen minutes that had taken him a week to produce the previous year.

Each participant also received a follow-up day of training. A user group met every other month. The meetings provided the members with new tips and tricks from the district trainer and allowed time for sharing of technical skills learned and insights gained into the instructional program. Carole Urbansok-Eads, Director of Guidance, Testing, and Research, provided a valuable session dealing with the types of statistical analysis that is valid and pitfalls to avoid.

Business Objects is a powerful tool because it allows novices to generate meaningful reports and it allows users with advanced statistical knowledge to produce even more sophisticated information. This product also allows the school district to produce standard reports that are held in a repository and are available to each school. These reports are templates. When templates/reports are used, they prompt the user to select the appropriate school and then generate the report for that school. The administrator can then either use the prepared reports or do additional scenarios with the basic information generated. These reports can be saved at the building level for later use or enhancement.

Although Business Objects may be purchased as a web implementation, HCPS chose to use the client-sever version of the product. A powerful, secure server, located on the district's wide-area network, hosts the SQL database in a Microsoft NT environment. The client software, Business Objects, is loaded on each administrator's desktop. Business Objects, SQL Server, and NT authenticate a required login and password. Information in the data warehouse is read-only. Other than district generated reports, all work is saved at the building level. A report can be saved to a laptop. The computer can then be disconnected from the network. Any reports saved can then be further analyzed in an off-line mode.

Implementation

The district faced several challenges while implementing this solution. Identifying the data elements for the warehouse was key. Each element has associated costs, of both a monetarily and human nature. Great effort has been and is being expended to minimize the effort required to keep information accurate. The initial migrating of data from the different sources into the SQL database was both tedious and time consuming. Staying focused on specifics was difficult when dealing with overwhelming

Data Warehousing, continued

amounts of information. Freeing up all district administrators for two days of training was an intricate task.

The most difficult task in the future will be to maintain current and accurate data. All student information is entered at the building level, twenty schools with multiple individuals inputting information at each site. Data stewards, the persons most responsible for the information, will be charged with insuring the accuracy of particular data sets. Limiting data will always be a challenge. Before any new element is added to the warehouse, a committee will review it. By definition, a data warehouse contains no "live" data. The system is refreshed each night with any time sensitive data. Standardized test scores need only be entered once when they are received. Evaluation of new techniques and user satisfaction will be a continuing effort.

Despite the challenges, there are many advantages of HCPS's Instruction Decision Support System:

- It is easy to use.
- Administrators have a fast and easy way to receive information not available in the past.
- Customized reports can be generated and saved.

The IDSS allows instructional leaders to make decisions based on information. This in turn leads to improved student performance, the goal of educators everywhere.

Article Resource URLs

Business Objects
http://www.businessobjects.com

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About the Author

William Flaherty was named the Virginia Department of Education's 2002 Region I Educational Technology Leader in late October 2002. He is the Director of Technology Services for Hanover County. He can be reached at bill@hanover.k12.va.us.

Add Power
to Literacy Instruction
with PowerPoint

by Glenna Gustafson

F or a student with significant disabilities, it is not always easy learning how to read and write in school. Not only is such as student limited by his or her disability, but he or she also faces misconceptions of others and curriculum materials that are not accessible. Educators often "equate differences in the children's physical capabilities or means of communication with differences in intelligence, interest, or academic capabilities." (Erickson and Koppenhaver, 1995). For many students, physical access to the materials is the greatest barrier.

The need for educators to be willing to provide unique supports for children's literacy development and universally designed educational methods is not only essential but also mandated by law. The Individuals with Disabilities Education Act (IDEA 1997) requires that students with disabilities have access to the general education curriculum to the maximum extent possible. But shouldn't the curriculum provide universal access for all students – those identified with disabilities and those without disabilities?

Researchers at the Center for Applied Special Technology (CAST) have found that all students benefit from a universally designed curriculum that uses digital text. Educators need to move away from the fixed media of traditional text and utilize digital text to create educational materials that are accessible to all students regardless of their abilities (CAST, 2001). One way in which educators can provide literacy opportunities and access to the general education curriculum for all students is through the creation of talking books. In this instance, a talking book is defined as a story in electronic format that includes text, pictures, and auditory output. Hyperlinks can be included in the book to expand, explain, or enrich specific topics.

Tools for Talking Books

There are numerous multimedia programs that could be utilized for creating talking books such as KidPix, Hyperstudio, and Buildability. However, with current budget issues, teachers need to utilize software tools that can be found in their classrooms. PowerPoint, found in Microsoft's Office Suite, is a software application tool that is commonly found in most schools, and it can provide educators with a tool for creating talking books.

PowerPoint Power, continued

Using PowerPoint to create talking books promotes literacy and universal design for learning principles in the following ways:

- They are age and interest appropriate.
- They provide content information on appropriate skills level.
- They develop listening and speaking skills through sharing and responding to reading.
- They develop social closeness through reading and listening activities.
- They utilize digital text that can be quickly reformatted to meet the needs of the learner.
- They can be accessed by students with limited physical abilities.

The kinds and types of talking books that can be created are limitless. Books can be created that:

- Introduce, reinforce, or review materials covered in units of study, i.e., Ancient Rome, the Solar System, the parts of a cell.
- Supplement and enrich topics or units of study.
- Share students' individual work, i.e., original writing assignments – poems, stories, reports.
- Provide physical access to text that some students with disabilities may not have when using traditional text; i.e., students with visual disabilities

Copyright Concerns

Copyright issues are, of course, an important concern when creating a talking book. If a book utilizes a teacher's or a student's original artwork and text, then copyright is of course not an issue. Whenever possible, encourage students to create original artwork and text to utilize in the talking book. If this not possible, then it is recommended that pictures be downloaded or scanned that are not copyrighted. Materials that are considered public domain are free from copyright restrictions. There is a collection of sites included at the end of this article where public domain pictures, graphics, sounds, and text can be found. Remember that it is always a good idea to reference the source from which the image, sound, or text was found.

The passage of the Chaffee Amendment in 1996 allows educators some latitude in the reproduction and distribution of materials in accessible formats for individuals with visual disabilities and certain other disabilities. Books and other text materials can be created reproduced in some "specialized format including Braille, audio, or digital text. Materials created under this amendment are to only be utilized by students with identified disabilities (McNeill, 2001). More information about the specifics of the Chaffee Amendment can be found in the links provided at the end of this article.

If there are doubts or concerns about copyright issues, one of the wisest things to do is contact the publisher of the material. Ask if there are guidelines concerning the use of their materials. Document within the content of the talking book if the publisher granted permission.

PowerPoint Power, continued

Creating Your Template

While the process of creating a talking book can be time consuming, it is simple enough for novice computer users who have some basic knowledge about PowerPoint. The following directions are for creating a talking book in PowerPoint 2000 found in the Microsoft Office Suite 2000 and were adapted from *How to Create Talking Books,* by Richard Walter (2001). You should begin with the creation of a template (graphics to help demonstrate this process are included in a PDF file linked from the end of this article).

1.   Create a blank page by choosing File; New; and Blank Presentation.
2.   Choose the blank page layout.
3.   Add the page turning arrows
    a. Select Slide Show; then Action Buttons
    b. Choose the forward arrow; position the arrow in the bottom right hand corner of the page.
    c. When the Action Settings Box appears, check to see if: Hyperlink to Next Slide is selected and click OK. If needed, you can now readjust the size and location of the arrow button.
    4. Add a back arrow button in the same way, but position the arrow in the bottom left hand corner of the page. Make sure that Hyperlink to: Previous slide is selected. Click on OK.
    5. Add a page turning effect by choosing: Slide Show; then Slide transition. Next choose the transition effect: Cover Left.
    6. Save your slide as a template.
        a. Click on File; then Save As; then Design Template. Name the template "Talking Book".

Your template will now be available whenever you open PowerPoint under New Presentation. Note that you have not added a sound button yet; you will do this after adding graphics and text.

Adding the Good Stuff

You are now ready to create your talking book utilizing your template.
1.   Open PowerPoint, click on File; then New and open your template "Talking Book".
2.   To create the correct number of pages for your book, open the Slide Sorter View and highlight the blank slide.
    a.   Press CTRL and D (together) to add the number of slides that you need. The slides will already be linked because of the arrows that were created on the template.
3.   You can add graphics by inserting or pasting. Images can be scanned, captured from graphics programs or the Internet, or be original drawings created in a Paint program.
    a.   Click on the Insert menu; then Picture; then From File. Choose the location where your picture is stored and click Insert.
    b.   Place the picture of the page, where you can resize and position it.
4.   You can now record speech for your talking book. If possible have a student record the sound. PowerPoint records sounds in two different

PowerPoint Power, continued

ways. Since your recordings may produce larger sound files, it is necessary to alter some settings within PowerPoint.

    a. Click on Tools; then Options.

    b. In the dialogue box, click on General; then Link sounds box with files greater than and type in 50000. (This is the largest number that PowerPoint will accept.) Now all of your sound files will be included with your pages and will play correctly when played on another computer.

    c. Click on Insert; the Movies and Sound; then Record Sound.

    d. A recording window will appear. When you are ready to record, click on the round red record button; click on the rectangular stop button to stop recording. It is important to remember to name each of your sound files. I usually name mine to go with the page of the book, i.e., Title, Page 1, etc. Then click OK.

5. To combine your page turning with speech so that a single mouse click or switch will turn the page and speak the text, go to Slide Show; then Slide Transition; then Sound. All of the sounds from your page will be listed here. Choose the sound for the page and click on Apply.

6. Complete the following steps for each of your slides.

Wrapping It Up

You are just about finished with your talking book.

1. Choose Slide Show; then Set Up Show; then Browsed at a Kiosk; and OK.

2. You may want to consider adding a time delay between page turnings. This would be helpful to those students utilizing a single switch for access. Choose Slide Show; then Custom Animation; then Action button: then Forward; then Start Animation; then Automatically; and 00:02 seconds; then OK.

3. The easiest way for single switch users to utilize the talking book is to have the keyboard switch interface set to mouse click, then have a peer or adult position the cursor over the forward arrow. Whenever the switch is clicked, the talking book will turn the page and read the text. (Walter, 2001)

Article Resource URLs

Instructions for creating a talking book using PowerPoint 2000
http://filebox.vt.edu/users/gsgustaf/vste/ppt-instructions.pdf (140 kb file)

Technology in Education

VSTE

Virginia Society for

www.vste.org

PowerPoint Power, continued

Photos and Graphics

FreeFoto
http://www.freefoto.com/

Free Images
http://www.freeimages.co.uk/

The Amazing Picture Machine
http://www.ncrtec.org/picture.htm

Microsoft Clip Art Gallery
http://dgl.microsoft.com/

Audio

The Free Site
http://www.thefreesite.com/Free_Sounds/Free_WAVs/index.html

The Wav Place
http://thewavplace.com/

Cartoon Sounds
http://www.cartoonsounds.com/

Free Audio Clips
http://www.freeaudioclips.com/

Copyright issues

Educators and Copyright
http://www.dese.state.mo.us/divimprove/curriculum/copyright/educ.pdf

Securing Permissions and Releases
http://www.utsystem.edu/ogc/intellectualproperty/permsrel.htm

Fair Use of Copyrighted Materials
http://www.utsystem.edu/ogc/intellectualproperty/copypol2.htm

Chaffee Amendment
http://www.bitlaw.com/source/17usc/121.html

PowerPoint Power, continued

Text

Alex: A Catalog of Electronic Texts on the Internet
http://www.infomotions.com/alex/

American Library Association Great Sites
http://www.ala.org/parentspage/greatsites/lit.html

Internet Public Library
http://www.ipl.org/

On-Line Books Page
http://digital.library.upenn.edu/books/

Project Gutenberg
http://www.promo.net/pg/

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Technology in Education

Virginia Society for VSTE

www.vste.org

Links to Popular VSTE Online Resources:

Current VSTE Board of Directors and Officers:
www.vste.org/communication/board.html

VSTE Electronic Journal Submission Guidelines:
www.vste.org/communication/journal.html

VSTE Membership Information:
www.vste.org/community/membership.html

VSTE's Annual State Technology Conference:
www.vste.org/conference/2003/

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