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Education in the 21st Century
TECHNOLOGY INTEGRATION

In this issue …

Education in the 21st century means preparing students to use an ever-expanding array of technological tools to enhance intellectual development, career opportunities, as well as local, national and global connections. This is an exciting and demanding challenge, and NYSUT members are leading the way!

This issue of *Educator's Voice* focuses on a variety of topics — from the use of a particular technology and its impact on one classroom, to the necessity to have a district-wide vision and a sophisticated plan to ensure technology integration is equitable for all students. Authors describe the tremendous impact technology can have on particular students — especially students who are English language learners and students with disabilities — and the importance of professional development that keeps pace with rapidly emerging technologies.

The range of tools that school personnel and students have to gather and produce information is unprecedented in our history. The purpose of this volume is to share our members' expertise in using and integrating these powerful tools.

Dear Colleagues,

NYSUT is taking the lead in defining *Excellence* in teaching. Best practices in the use and integration of technology are now inherent in what our profession defines as Excellence.

As stated in the preamble to **NYSUT's Principles for Taking the Lead in Defining Excellence,** "Public education is the cornerstone upon which the growth and dissemination of new knowledge for the public good and American democracy are built. Public education is critical to an informed public, a vital economy, and an engaged society."

In 2011, most of the "growth and dissemination of new knowledge" is happening in a digital environment. A great education is, in part, defined by one's ability to use the vast array of technological tools newly emerging at a dizzying pace. Yet, tools need to be used wisely. Therefore, our profession will always focus heavily on developing critical thinking based on a foundation of respect for self and others.

With technological advances, we are able to communicate across the world at an amazing speed, but, as often stated, what matters most is *what* we communicate. Excellence in education results in citizens who know who they are, how to design a satisfying and fulfilling life, and how to seek and produce information for their work, their creative endeavors, their connections and their contributions.

These authors have a vision for their students and their schools. Technology is an important part of that vision. They have chosen to share their ideas as well as their excitement about the new possibilities emerging every day. We thank them for their contributions to this volume of *Educator's Voice*. It is with pleasure that we share with you how NYSUT members are demonstrating Excellence.

In Solidarity,

Maria Neira

Maria Neira
Vice President, NYSUT

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In this volume devoted to educational uses of technology, many authors have referenced specific hardware and software products in the discussion of their work. These mentions do not imply any approval or endorsement by NYSUT of any particular product, service, or link to a website.

Successful Technology Integration: A District-wide Initiative

SUMMARY

Take a dedicated, hard-working staff, a union and administrators working collaboratively, give them and their students access to some cutting-edge technology, and you have the key elements in the sweeping transformation of one Hudson Valley school district.

Imagine…

- First-graders practicing sound-symbol relationships on a SMART Table, dragging symbols across a screen and explaining their choices to their classmates;

- A fourth-grade class working together to design, storyboard, produce and broadcast a digital television program for a local TV station;

- A virtual writing lab using blogs in which students give each other constructive feedback;

- A biology review lesson for a high school special education class done entirely through 3-D technology;

- A high school art class focusing on computer fashion design — followed by construction of the fashions in a Home and Careers class; and

- A technology coach available to every teacher in the district, whose responsibility is to support the use of technology in the classroom, regardless of teacher skill level.

If you are either an employee or a student of the Enlarged City School District of Middletown, you do not have to imagine any of this — it is *reality*.

Technology is a key element in the turnaround of the Middletown District. Staff implemented the changes that were necessary to bring the district into the 21st century and alter its District In Need of Improvement (DINI) status. Educational results as reported by student performance scores have radically improved in this district, located in Orange County, 65 miles northwest of New York City. Middletown comprises seven buildings and 6,750 students. The district is quite diverse in terms of culture and ethnicity. The percentage of students

Sheila E. Esposito, a special education teacher, is a 22-year veteran of the Middletown School District and is in her eighth year as president of the Middletown Teachers Association. She also co-facilitates the District's APPR and PDP committees, having served on both committees for the past 10 years.

Sheila Esposito, Middletown Teachers Association

eligible for free or reduced-price lunch is 74%. In addition to the integration of technology, and improved physical settings, the metamorphosis in Middletown can be attributed to a union and administration that work collaboratively.

District-wide Technology PLANNING is the Key

Every school district in New York state is required to submit a Technology Plan to the New York State Education Department to be eligible to receive formula and competitive grants under the Elementary and Secondary Education Act (ESEA) Title II, Part D and other federal funding perograms. Middletown's current Technology Plan was developed by a district team that included the superintendent of schools, key technology staff, administrators with responsibility for curriculum and instruction, the union president, teachers appointed by the union, and representatives from both the Board of Education and the community. The Middletown Technology Plan's vision statement frames the district philosophy:

"Powerful information and communications technology (ICT) will strengthen the quality of our teaching, thereby helping us to meet the current academic and social needs of all our students, preparing them for continued personal and educational growth as lifelong learners. We believe that equipping our schools with current technology is important. We know that a well developed and well-supported technology infrastructure will address NCLB, Federal Communications Commission e-rate and New York state learning standards. We will prepare our students for the challenges they will face in the current and future economies, and increase the opportunities that will encourage them to remain members of the Middletown community."

Even with the best intentions and great ideas, district plans can end up filed in a drawer or placed carefully on a shelf. We in Middletown have not let our Technology Plan meet this fate. We included the essential ingredient of union involvement in the creation of the plan from the beginning.

Powerful information and communications technology will strengthen the quality of our teaching, thereby helping us to meet the current academic and social needs of all our students, preparing them for continued personal and educational growth as lifelong learners.

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> **Research guided our technology plan, and when we encountered road bumps and challenges we didn't give up. We took risks, we addressed the concerns raised by our colleagues, and in the process we developed mutual respect and trust.**

Administrators, beginning with the superintendent, demonstrated commitment with their ideas and financial resources. Research guided our technology plan, and when we encountered road bumps and challenges we didn't give up. We took risks, we addressed the concerns raised by our colleagues, and in the process we developed mutual respect and trust.

Our district Technology Plan emphasizes the following:

- Expanding both teacher and student use of technology, especially targeting the core subjects;

- Sustaining professional development opportunities;

- Focusing on student growth and achievement, utilizing information systems including data-driven decision making;

- Investing in data mining software and student information systems; and

- Providing continuous support and expansion of all aspects of the technology infrastructure.

From Planning to Implementation

Middletown's Pre-K-12 Technology Plan is an accurate and comprehensive picture of the strategies we are using. One critical aspect is the way the district builds the staff's capacity to learn how to use technology and to *support* them in the implementation. The district provides and requires professional development to support the integration of technology for every teacher, in every school, in every content area, and at every level. Teachers are expected to complete the required professional development in order to obtain technology equipment. Beginning in 2005, those early adopters who had previously caught the technology "bug" flocked to the first round of programs. Others became engaged by seeing the excitement of their fellow teachers. Every person in Middletown CSD is *expected* to integrate technology. Technology is not just for "techies" or those who are interested. All really means All!

To support staff in learning about technology, the district created three technology coach positions as a key element in building staff capacity. The technology coaches:

- Provide direct skill instruction to staff in professional development classes offered after school;

- Guarantee a safety net for teachers as they use technology in the classroom;

- Provide onsite, ongoing technical support, which is especially critical for those who are reluctant or apprehensive about using technology; and

- Are centrally located so they are available to provide support districtwide.

Applicants for teaching positions are screened for their interest and ability to use technology in instruction, and every new hire is expected to participate in the district technology introductory professional development course.

Technology Integration in Action

Our Technology Plan and its level of support have really paid off. The following sample scenarios describe the ways that teachers with all levels of technology experience and interest are building their expertise with technology integration.

First-Graders Love the SMART Table

Veteran first-grade teachers Monica Alderman and Lucia Weier freely volunteered that they had minimal experience with technology in their classrooms. When approached by technology coach Jesyca Greene to share a SMART table for a pilot program for language instruction, they began by learning how to use the applications provided by SMART — and incorporating the SMART Table as a center for guided reading activities during daily literacy instruction. A

SMART Table is an interactive learning center, which is multitouch and allows groups of students to work on one surface simultaneously. Monica also experimented with developing math activities on the SMART table. By the time the table moved to Lucia's room, both teachers had learned how to use the SMART Notebook software to develop some of their own SMART Table lessons.

During the course of the pilot program, students were engaged in assessing the success of the technology through class meetings and responding to writing prompts. One seven-year-old student said, "I like it because we have to think about and talk about what we see." Common themes from the students were that they needed to talk with each other about their ideas and work together to choose answers, and that use of this technology reinforced reading because they had to read directions, questions, and answers. Through observation, the teachers were able to witness the collaboration and an increased level of conversation and thinking skills.

Television Producers in Grade 4

David Craig, an experienced grade 4 teacher, is a self-professed "techie." He found a newscast activity in a book on literacy he had borrowed from the Middletown Teachers Center library. He divided the class into reporting

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teams and taught the students how to use the cameras and computer hook-ups for projection. This allowed the class to view segments of the production directly from the SMART Board.

The students' enthusiasm was off the charts. They interviewed staff and administrators and combined the footage to create the class newscast: "Room 011 News." With the help of the district technology department, the final version was shown on local television (Channel 20) in Middletown.

David reports that technology has had a tremendous impact on student learning in his classroom. The newscast experience helped transform the shyer fourth-graders into excited junior reporters and avid learners. Many of them wanted to be on camera and helped to create questions to ask during interviews. The more timid students took pride in running the Flip camera. Getting children to talk in front of their peers is not always easy, but this project helped some of them overcome that fear. David created other technology-based projects, including:

- A blog to motivate students to read more. They would write about what they read, both in school and at home. David didn't have the heart to close the blog because even over the summer his students were still writing about what they were reading.

- A Web page full of interactive resources for students to use both in school and at home. Former students continue to use these online resources.

- Activities drawn from *NYLearns. org* — which provides access to educational resources and instructional content developed by master teachers. The content is aligned to the New York State Learning Standards.

3-D Technology in Biology

High school biology teachers Lauren Claisse and Martha Brunelle, with intermediate skill levels in technology, had little experience with the scope of 3-D software. The software presents objects studied in biology projected from a computer, showing parts of organisms — such as taking a tour of the body. The software allows students to manipulate objects, see their relative locations, and label parts. Lauren and Martha learned how to use the new technology with strong onsite support from technology coach Amy Creeden.

When asked to pilot the 3-D instructional technology, the two team teachers decided to explore whether students would actually improve academically using this new technology. They decided to approach the implementation as scientists and selected

two-year Inclusion Biology Core classes to study. The students in these classes were either designated as having learning disabilities or students who could benefit from having the information presented at a slower pace — over two years. The demographics of the two groups were similar. Each class had approximately 50% of the population designated students receiving special education (those with IEPs). The other 50% was composed of students requiring extended learning time or who were Limited English Proficient.

One group was given a pre-test on photosynthesis and then exposed to a standard review lesson using a 2-D leaf model and worksheets. They were then given a post-test. They scored an average of 53% before the review, and 63% after the worksheet review. The other group was given the pre-test and scored an average of 33%. They were involved in the lesson using a 3-D simulation on photosynthesis and completed the same worksheets. At the end of the lesson, they were given the post-test and scored 76%. While there are many variables that can influence outcomes on a test, this result was exciting!

Technology Crosses all Disciplines

Heather Illingworth teaches a high school Advanced Computer Graphics course, which focuses on design software such as Photoshop, Illustrator, and Dreamweaver. In the summer of 2010 she was selected to attend a prestigious two-week training program, Teaching In Contemporary Art (TICA), at the School of the Art Institute of Chicago. As a district leader in implementing technology, she reported: "TICA proved to me that art and technology are crossing into disciplines such as science, math, ethics and communication more than ever before."

The TICA summer program exposed Heather to several prominent artists who use technology in their work, including: Richard Pell, a professor at Carnegie Mellon, who founded the "Institute for Applied Autonomy" that focuses on robotics; Eduardo Kac, who manipulates genetics to create new "designer" animals like "Alba," the genetically altered green fluorescent rabbit; and interdisciplinary artist Heidi Kumao, who creates video/projection installations to explore social phenomena and historical events that temporarily place the viewer outside his or her comfort zone. Heather also was introduced to several software programs, many of which are free, such as Processing and Pure Data, which use algorithms, math, and coding to create art.

…additional critical ingredients are honesty and trust between the administration and the teachers, and a willingness to do the hard work together.

Successful Technology Integration: A District-wide Initiative

> **Sixty percent of the grant funds must be spent on high-quality professional development focused on technology integration.**

TICA influenced how Heather teaches in terms of exposing students to new software, and inspired her to ask her students to question their environment and to collaborate with each other. She says that art is not one person standing in front of a canvas, but rather — similar to other aspects of our lives — art now focuses on people pooling their special areas of expertise to create something new. The common message for art teachers and all teachers is to *combine and synthesize and work together.*

What is Next in Middletown?

Some of the most recent developments for Middletown include:

- Exploring "push out' technology to engage parents/caregivers and community members. Recently, the school district launched a revamped website, and for the first time, instant updates on school news, emergencies, events and sports are available for the iPhone, Blackberry and Android. The aim is to open new and more convenient ways of communicating district information to parents through the use of new technologies.

- The planning stages of a new elementary school feature state-of-the-art technology devices, including learning walls, individual micro projectors, and iPods.

- *Enhancing Education Through Technology — Student-Centered Active Learning Environment* (EETT3-SCALE). This federally funded grant, awarded by the New York State Education Department, involves teams of teachers from Maple Hill Elementary School and Middletown High School:

    Six teachers selected at Maple Hill Elementary (grades 2-5, including special education) will each be given an iPad, an iPod Touch mobile learning cart equipped with 30 iPods, and one MacBook for use in the classroom.

    At Middletown High School, 10 ninth-grade math teachers will each be given use of an Integrated SMART Board, Airliner, laptop, TI Navigator and a set of TI-84 calculators.

Sixty percent of the grant funds must be spent on high-quality professional development focused on technology integration. Intensive professional development will occur throughout the school year and will focus on:

- Integrating the use of technology into the curriculum, and

- The use of technology as an instructional strategy to meet the differing needs of the students.

The critics say there are too many obstacles to district-wide technology integration — only rich districts can integrate technology, teachers are too resistant to change and too afraid of failure. Money, resistance and fear can be obstacles to implementing any change effort. What does it take to overcome the obstacles? Middletown (administrators, teachers, and other staff) believes the key is:

■ a solid vision

■ a long-range plan

■ effective utilization of resources

As union president, I would add the following to the list of critical ingredients: honesty and trust between the administration and the teachers, and a willingness to do the hard work together. Middletown teachers and administrators say they cannot imagine education without cutting-edge technology. The results can be seen in the students, who are proud of their district. Middletown students now demonstrate a newfound confidence that they will succeed in the world of the present and the future.

The writer would like to thank the following for their contributions to this article: Monica Alderman, Martha Brunelle, Lauren Claisse, David Craig, Amy Creeden, Kenneth Eastwood, Robin Geiger, Heather Illingworth, Lori Lawrence, and Lucia Weier.

Resources that Middletown Drew Upon in Developing the Technology Plan:

21st Century Skills
http://www.21stcenturyskills.org

P21 Framework
http://www.21stcenturyskills.org/documents/P21_Framework_Definitions.pdf

International Society for Technology in Education (ISTE)
http://cnets.iste.org/students/s_stands.html

Science, Technology, Engineering, and Mathematics (STEM) Coalition
http://www.stemedcoalition.org

New York State Education Department.
USNY Statewide Learning Technology Plan
http://www.p12.nysed.gov/edtech/

Supporting English Language Learners Through Technology

SUMMARY

English language learners benefit from the reinforcement of vocabulary and concepts through pictures, graphics and video. They also benefit from being able to use technology to express themselves. As the authors demonstrate, technology helps English language learners find a voice, easing the transition to a new language.

If you are looking for a way to add excitement to your lessons and connect with more of your students, technology is the answer! Utilizing and combining graphics, video, and audio can address varied styles of learning in a more effective way and be a tremendous support to English language learners. Finding a way to infuse technology into instruction not only helps English language learners acquire a second language, but also enhances motivation and confidence (Lacina, 2004; Lin, 2009). The *National Education Technology Plan 2010* focuses on using technology to transform the American educational system (US Department of Education, 2010). As educators, we are in the unique position to embrace new technologies and use them to enhance curriculum while better engaging each of our students.

Acquiring a New Language

It is important to understand how students acquire a new language in order to appreciate the significance that technology can have in ensuring success for English language learners. Research shows that it can take more than five years for the average child learning a new language to acquire the academic language necessary to succeed in school. Successful acquisition requires two types of skills: Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP). BICS refers to social or conversational language, while CALP is the academic language needed to comprehend and analyze a textbook or understand a presentation by a teacher (Cummins, 1996). This distinction explains why it often appears that some English language learners have a better grasp of English than they actually do.

Elizabeth Brozek and Debra Duckworth teach English as a Second Language in the Syosset Central School District on Long Island, and have worked with students in grades K-12. Instructors for NYSUT's Education & Learning Trust, they have served on numerous state education panels and presented workshops and in-service courses on meeting the needs of English language learners.

Elizabeth Brozek and Debra Duckworth
Syosset Teachers Association

"Conversational fluency is often acquired to a functional level within about two years of initial exposure to the second language, whereas at least five years is usually required to catch up to native speakers in academic aspects of the second language" (Cummins, 2000, p. 76). By using multimedia technology to incorporate pictures or video into the lesson, the teacher can provide students with the necessary contextual cues to understand new concepts. Visual information can provide the necessary bridge or scaffold between everyday language and more difficult academic language (Cruz, 2004). In addition, technology allows students to show what they have learned in *multiple* ways — offering a more accurate assessment of their growth.

Hardware

Many schools are installing new types of hardware into classrooms and computer labs that can make a tremendous impact on instruction.

Interactive Whiteboards

One of the most common types of hardware used in schools is the interactive whiteboard (Davis, 2007). This technology is an excellent tool for presenting multimedia lessons and encouraging student participation. If you are unfamiliar with how an interactive whiteboard works, think of the board as a large computer screen and the pen as the mouse. There are numerous benefits of an interactive whiteboard over a traditional chalkboard. For example, the teacher:

- No longer needs to erase notes from the board in order to make room for more information. This is problematic for English language learners who have difficulty copying and comprehending simultaneously. Notes and visuals can be saved for students to review later.

- Can save the note files and post them to a website or print them out.

- Can go back and forth between diferent pages of notes in order to help students make connections with previous lessons.

- Is able to incorporate pictures, videos and organizers with ease, thus assisting English language learners to more fully understand concepts and learn new vocabulary.

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> The major advantage to a document camera is the ease with which almost anything can be quickly displayed for a large group.

Document Cameras

Document cameras, like the one manufactured by Elmo, can project images directly onto a whiteboard, allowing teachers to write notes on the projected image. Document cameras can be used to project pictures, pages from textbooks, student work and even three-dimensional objects. Introducing or reviewing a concept while using manipulatives and props helps students gain a deeper understanding (Lin, 2009). The English

language learner is able to see what is being addressed while listening to the information. The major advantage to a document camera is the ease with which almost anything can be quickly displayed for a large group.

Web-based Software

Video is a particularly powerful tool. Commercially produced video and teacher-created video can greatly enhance classroom instruction. In addition, having students create their own videos can help them express their thoughts and show what they have learned. There are many software programs that make video production easy and fun, such as Animoto, Microsoft Movie Maker, and Apple iMovie.

Microsoft Photo Story 3.1 is a free user-friendly program that is available as a download for Windows users. This program brings new life to traditional picture slideshows by allowing users to customize motion, include voice narration and add music. The final product can be saved as a video. Software such as Photo Story can be used in a variety of ways to assist English language learners. For example, Photo Story can be used to summarize a particularly difficult concept or lesson. Since oral language is acquired before written language, this allows students to showcase and reinforce what they have learned. Students can work independently or in small groups to create a Photo Story project on an assigned topic. Students use the Internet to find pictures and information, then create and record dialogue to go along with the images. Public speaking can be intimidating for

English language learners. With this approach, students can narrate each picture and do not have to feel overwhelmed by the demands of the task (Lacina, 2004). Students feel more confident knowing that they can erase and redo any recording. Through the use of these types of projects, students can demonstrate a level of comprehension that may be difficult to assess using traditional methods such as an essay or multiple choice format. By requiring that students incorporate some of the vocabulary of the unit into their project, they are also further developing their Cognitive Academic Language Proficiency (CALP).

This type of software can also be used for creative writing. Many students, including English language learners, find it difficult to express themselves in writing. When using Photo Story to facilitate creative writing, the students start by creating a brief outline of their story ideas. Next they create several illustrations to go along with the outline. The illustrations are scanned into the computer and imported into Microsoft Photo Story. The students then develop and record the narration to accompany the story. The final project includes the Microsoft Photo Story video as well as a transcript of the narration. Projects like this allow students to use their Basic Interpersonal Communication Skills (BICS) to express themselves.

Jean is a student who benefited from the use of Photo Story: A middle school English language learner at the beginner level, Jean had a very limited English vocabulary but was able to understand basic language and simple syntactic structures. Jean was in the "silent period," where he absorbed language but was not yet ready to express his understanding through spoken or written English. During this stage, students will begin to understand basic language but are not yet able to communicate that understanding. Forcing them to speak can be counterproductive, and in turn, slow down their learning process since it erodes confidence and creates a stressful learning environment. The use of technology can provide the opportunity for students to demonstrate their knowledge while reducing much of the accompanying stress.

Jean's ESL class was completing a unit on *Aesop's Fables*. The students were required to summarize and reflect on the lesson in each fable. Jean's ESL teacher guided him in using Photo Story to engage in this task. Despite the fact that Jean was uncomfortable speaking in English, he was able to complete the project in a way that enabled him to demonstrate his understanding.

> Introducing or reviewing a concept while using manipulatives and props helps students gain a deeper understanding … The English language learner is able to see what is being addressed as well as listen to the information.

Supporting English Language Learners Through Technology

> **Discussion boards can create a platform for students to be actively engaged in academic and social English while outside of the classroom environment.**

Since Jean showed an interest in art, his teacher encouraged him to use this ability to retell the story though pictures and simple narration. The success of this project seemed to contribute to the confidence he needed to emerge from the silent period.

Social Networking

Forms of social networking such as discussion boards can be beneficial for English language learners since they "encourage students to collaborate with others and participate in experiential learning experiences" (Lacina, 2004, p. 114). Discussion boards can create a platform for students to be actively engaged in academic and social English while outside of the classroom environment. There are several social networking programs available on the Internet, such as Dave's ESL Café, Classroom 2.0, and Moodle. Edmodo is a free social networking program that provides "an intuitive way for teachers and students to stay connected in a safe and secure learning environment" (Edmodo, 2010). This program allows teachers to post assignments, discussion topics, links and even videos. Students can comment on and discuss these topics within the framework of the Edmodo site. The teacher has full control to edit or delete comments. Also, students cannot privately interact with classmates through this program, making it easier for teachers to track student behavior and work. Another benefit of this program is that students can submit assignments electronically, saving paper and reducing the possibility of lost assignments. Teachers can grade and comment on assignments through the site as well.

Anita is a student who benefited from a social networking program: Anita began the school year as an intermediate level English language learner who had difficulty expressing herself in spoken and written language. Her social studies teacher noticed that she was more comfortable using social networking sites, and she was able to express herself using the Edmodo discussion board. As the year progressed, Anita appeared to transfer some of the skills she developed through the use of Edmodo to classroom discussions. Her proficiency with language advanced, her comfort level seemed to increase, and her level of engagement was greater. While improvement in Anita's development was undoubtedly linked to many aspects of her educational program, it appears likely that this strategy was influential in her growth.

English language learners in particular benefit from the reinforcement of vocabulary and concepts through pictures, graphics and video. They also benefit from being able to use technology to express themselves. Technology helps English language learners find a voice, easing the transition to a new language. To help students learn as much as possible and to demonstrate that knowledge, we need to fully and creatively use what advances in technology have to offer.

Additional Online Technology Resources

http://www.freetech4teachers.com
Free resources and lesson plans for teaching with technology

http://www.mimio.com
Teacher-created lessons for interactive whiteboards in the classroom

http://www.animoto.com
Create videos using photos, video clips, and music

http://www.youblisher.com
Allows you to turn PDF documents into flipable online magazines

http://forums.eslcafe.com/student/
Free discussion board forum for ESL students and teachers

http://moodle.com
Allows you to create teacher-hosted classroom discussion boards and online courses

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Your School Librarian: A Powerful Technology Partner

SUMMARY

With knowledge of integrating technology into the curriculum, school librarians are a valuable resource for all classroom teachers. Collaborating with them can pay off in higher student achievement in a variety of subjects, as teachers in this school district will attest.

Toss away the image of the librarian of old and investigate today's school librarian as a dynamic, collaborative teaching partner! Explore the possibilities of curriculum that is planned in partnership between the school librarian and classroom teacher. Today's librarians are experts in integrating appropriate technology across all curriculum areas to teach students the skills they need to succeed in the 21st century.

Collaboration among faculty members is the cornerstone of effective school programs — and key to the development of 21st-century skills of our students. Yet developing collaborative partnerships can be challenging. In this era of high-stakes testing, teachers often perceive time in the school library as an "add-on," rather than a core component of an instructional program. In this article, our successes with collaboration will be shared, as well as the frameworks and research that inform our mutual understanding of which skills matter and how to approach instruction.

What Informs our Work

The development of 21st-century skills is guided by standards from the International Society for Technology in Education's *National Educational Technology Standards for Students (ISTE, 2007), The New York State Crosswalk* ("An ISTE Crosswalk," 2008), and the American Association of School Librarians (AASL) *Standards for the 21st Century Learner* (2007). Whether students meet these standards is influenced by the quality of our collaboration as well as the theories of learning that are embraced by team members in our schools. Our work is greatly influenced by constructivist learning theory, which is grounded in the premise that learners create their own knowledge by building upon prior knowledge. Dewey (1910-91) perceived learning

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Donna G. Baratta, Yorktown Congress of Teachers

to be an active process in which knowledge is created by the learner through authentic activity in a meaningful context. Vygotsky (1978) built upon the social aspect of the theory, believing that learners gain knowledge through cultural experiences and interaction with more capable others such as teachers and peers. These theories provide the perfect foundation for designing activities that are student-focused, draw on higher order thinking skills, and involve collaborative learning.

Moving from Theory to Instructional Design — as Partners

We know that students benefit from school libraries and librarians. Todd, Kuhlthau, and the Ohio Educational Library Media Association (2004) conducted the *Student Learning through Ohio School Libraries: The Ohio Research Study* which examined how students benefit, and sought to calculate the school library's relationship to student learning. Data were gathered from 13,000 students, nearly all of whom indicated that the school library, its services and school librarians helped them with their learning.

Classroom teachers also benefit from this partnership since technology integration is a significant aspect of a school librarian's professional preparation. Librarians can work with classroom teachers who are just beginning to use new technologies — as well as those with advanced skills. LaBanca (2009) developed a schema that enables educators to identify three levels of technology integration. The first level, **retrofitting**, is when the teacher presents information in the same way, whether using traditional tools such as a chalkboard or overhead, or technology such as a computer. The second level, **retooling**, is when the teacher provides options with access to new items, like adding hyperlinks to a presentation that enable students to participate in a virtual tour of a museum. The third level, **reconfiguring**, changes the role of students from consumers of information to producers of information. This level typically involves Web 2.0 for a bidirectional flow of information and feedback between students and local or global communities. Librarians and teachers — as teammates — can navigate through these phases of integration. This navigation

Classroom teachers also benefit from this partnership since technology integration is a significant aspect of a school librarian's professional preparation.

Your School Librarian: A Powerful Technology Partner

Librarians can work with classroom teachers who are just beginning to use new technologies — as well as those with advanced skills.

can result in challenging inquiry- and project-based activities that immerse students in curriculum topics. Projects embed 21st-century skills in context, rather than teaching them in isolation. Students learn to take charge of their own learning as they develop essential questions, evaluate and use information, create knowledge, and communicate results. They are prepared not only for the test; they also learn skills they can apply for life.

What follows are just a few of the ways our collaboration in building 21st-century skills has been successful.

■ **Drawing on Students' Interest in Comics and Other Graphics** —In my role as school librarian, I teamed with eighth-grade English teachers to develop a book review comic project as an option to the traditional five-paragraph essay. This project is designed to use a comic to represent, interpret, and evaluate a work of literature. *Comic Life* (Plasq, 2010), an inexpensive software application, was used. Free comic applications such as *MakeBeliefsComix.com* (Guarionex Press Ltd., 2010), and *Myths and Legends* (E2BN, 2006) are also available online. We collaboratively prepared students for the book review comics. We reviewed essential project components, editing checklists, and project rubrics.

In addition, I provided instruction on software usage, image resources, and ethical use. Students chose essential elements for their book review comics based on either a timeline for non-fiction books or a plot diagram for fiction books.

Students were immediately engaged in the project. It was fascinating to watch them select graphics to represent key elements and concepts of the books they had read. Graphics were effectively used to convey ideas with carefully written, succinct explanations and, in some cases, dialogue between characters. Overall, students successfully used higher order thinking skills to synthesize information and apply it appropriately in a graphic representation.

Classroom teachers commented on the comic format as having encouraged students who do not typically participate in class to find their voice through the comic format. Upon reflection, eighth-grade English teacher Ginger McElduff wrote: "Initially, the idea of using a comic to represent, interpret, or evaluate a work of literature seemed to be a fun and simple exercise. However, representing the literature through graphics and limited text was in reality demanding, but quite rewarding." We

were pleasantly surprised with the students' enthusiastic responses to this project. The quality of the work overall was extremely thoughtful and impressive. Theresa Carey, eighth-grade English teacher, said: "This project was a great success. The students' interest in reading and technology grew, and they developed a new love of creativity in the classroom that continued through the school year and will take with them into their future education endeavors." Digital storytelling through comics brought fresh perspective to social studies students. Seventh-grade students reported news from the Revolutionary War. Their teacher, Sean Carney, notes: "By creating comics, students got an inside view of what was happening at places like Valley Forge, Lexington and Concord, Bunker Hill, and more. They loved the different outlet of writing as it allowed them to think outside the box and create something different from anything they had done in the past."

Eighth-grade students synthesized and presented the key elements of significant events of World War II. Their social studies teacher, David Marr, believes the project "increased the students' motivation to describe, illustrate, and provide commentary on historical events.

This added motivation was the catalyst to a very successful week of research, analysis, and creativity."

Using a free online site, *MyAvatarEditor.com* (2010), students with learning challenges enjoyed collaborating on an original superhero comic strip in which they created individual characters graphically represented by avatars resembling those found in popular video games. Students transformed their comics into enhanced podcasts, which included comic graphics and images to illustrate their audio superhero stories. This type of multimodal digital storytelling enabled students to create, collaborate, and communicate their work. Special Education teacher Mario D'Auria, already thinking about his next project, stated: "Comics and podcasting do indeed have a learning curve initially, but once students and teachers embrace the technology, it becomes an integral part of the learning process."

- **Podcasting** — Podcasts are files that can be released by the author, downloaded by others and stored on a computer or other device such as an MP3 player. An enhanced podcast is a file that contains audio and can also display images, video and hyperlinks. Enhanced podcasts

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Your School Librarian: A Powerful Technology Partner

> Research studies in more than 16 states have demonstrated that school library programs, when staffed by qualified school librarians, have a positive impact on student academic achievement.

have been developed by students in grades 6-8 across curriculum areas. Classic book podcasts make literature come alive as reporters enrolled in reading, speech, and language classes selected events, wrote scripts, chose graphics and audio, and verbally communicated their favorite scenes to the local and global audience. Laurie Kalinoski, speech/language pathologist, explained, "Working alongside our school's library media specialist has proven to be an invaluable experience for my students as well as myself. She has taken me from being technologically challenged to technologically capable! I am excited to share my new knowledge in the classroom with my special education students, who in turn have learned to incorporate this new multisensory resource into their academic lives."

Sixth-graders in Deborah Potter's social studies class reported news from Ancient Egypt featuring topics related to daily life; Michelle Manicchio's English class students drew illustrations for original works of poetry and shared them with the global community using enhanced podcasts posted on the district website.

■ **Wikis, Whiteboards and Tablets**
Wikis (websites containing the collective work of many authors),

interactive whiteboards (connected to an LCD projector and allowing touch control of computer applications) and *wireless slates* (interact with the whiteboard by touching electronic pen to screen from any location in the library) allow students to collaborate on topics relating to school, career, and future planning. These topics are based on the Career Development and Occupational Studies (CDOS) learning standards. The Life Explorers program, developed in collaboration with guidance counselor Paula Ward, provided enrichment during lunch periods. Students explored goals and dreams using Wordle word clouds (Feinberg, 2009), examined character strengths in the creation of digital person-of-the-year posters, and developed solutions to communication problems through comics.

Our Experience Confirms What Research Tells Us

Research studies in more than 16 states have demonstrated that school library programs, when staffed by qualified school librarians, have a positive impact on student academic achievement (Scholastic Library Publishing, 2008). One of the most significant studies is *How School Libraries Help Kids Achieve Standards: The Second Colorado Study* by Lance, Rodney, and

Hamilton-Pennell (2000). The study examined the Colorado Student Assessment Program reading scores and revealed increased reading scores correlated to increases in library program development, information technology, teacher/library media specialist collaboration and individual visits to the library media center. A central finding of the study was the importance of collaboration in teaching information literacy skills and the related increase in test scores. Increases in student achievement were also realized when the librarian trained teachers, keeping them abreast of new information resources (Scholastic Library Publishing, 2008).

The 21st century brings rapid change and opportunities never before seen in education. Working together as collaborative partners, we can be the transformational agents of change who provide opportunities for the development of skills and meaningful learning that will positively impact our students now and in the years to come.

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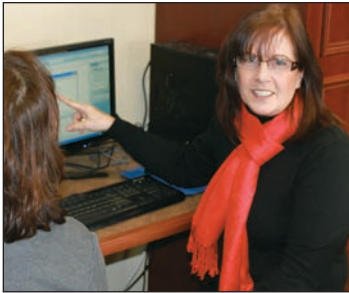
Universal Design for Learning: Ensuring Curriculum Accessibility for All

SUMMARY

Universal Design for Learning is about designing curricula that are accessible to all students. Here, the author shares how some different technological tools have made this dream a reality for students in one Long Island school district.

Universal Design

for Learning (UDL) is both exciting and challenging. Many of our Three Village Central School District teachers have begun to embrace the philosophy and practices of UDL. As noted in the UDL guidelines offered by CAST, the Center for Applied Special Technology (see p. 26), UDL is about moving from one-size-fits-all curricula to materials and methods that all students, regardless of their learning needs, can access. UDL principles focus on students being provided:

- multiple ways of accessing content,
- multiple ways of expressing what they know or create, and
- multiple ways of engaging with content.

Working Together to Make UDL a Reality

Keeping in mind that utilizing new technologies is a dynamic process with inherent challenges, we have embraced the philosophy that these challenges are opportunities for growth. UDL depends heavily on successful teamwork across roles. Key players are classroom teachers, special educators/related service providers (e.g., speech-language therapists) and technology specialists. Our special education teachers work closely with the Information Technology Department to provide students with special needs the assistive technology (AT) necessary to achieve success.

Our special education case managers and service providers incorporate technological tools into the mainstream curriculum where all students are treated as individuals. This fosters an inclusive philosophy of special education. Our instructional technology teacher leader works with faculty to provide access to mainstream course materials and assignments via Moodle (*http://www.moodle.org*), a free course

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**Nancy Maurer Murolo, Three Village Teachers Association
Association of Dowling Adjuncts**

management system. This allows the teaching teams to have the information they need ahead of time in order to ensure curriculum accessibility.

Assistive Technology

Assistive technology, an important component of UDL, is any tool that helps a student with a disability perform tasks that he or she may not otherwise be able to do. It also includes the process used in selecting, obtaining, and using these tools. Within the classroom setting, assistive technology allows students to access the curriculum and communicate with others.

While our district's use of advances in AT has been impressive, implementation can be a challenge. Our district has made significant progress over the last few years by looking at our *process* of determining students' needs in this area. The first step in the process is evaluation. In the past, assistive technology evaluations were often "contracted out," resulting in extensive lists of assistive technology devices and software, networking nightmares, licensing issues, expensive training

sessions, and limited staff engagement or support for the product. These factors can lead to the abandonment or underutilization of a particular device.

Now, Three Village special educators evaluate their students' assistive technology needs by first considering existing instructional technology resources. Our Individualized Education Program (IEP) teams (which include parents/caregivers) determine which tools are necessary for the student to attain IEP goals and objectives. Rather than identifying specific manufacturers or brands, we list:

- word processing tools
- calculator
- graphic organizer
- magnifier

The teaching teams (e.g., classroom teacher, special educator) are then at liberty to try out a variety of tools and determine the most appropriate technology device to address the needs of the student. This allows teachers to be more responsive to a student's needs.

> UDL depends heavily on successful teamwork across roles. Key players are classroom teachers, special educators/related service providers (e.g., speech-language therapists) and technology specialists.

UDL principles focus on students being provided:
■ multiple ways of accessing content,
■ multiple ways of expressing what they know or create, and
■ multiple ways of engaging with content.

Professional development regarding the particular tool, coupled with a turnkey approach to staff training, has been invaluable. The "Train the Trainers" model serves to provide professional development to staff members who participate in and guide IEP/504 teams. In addition, most of the new assistive technology devices have Web-based video tutorials and webinars to provide flexible and individualized training for staff and students.

Our special education staff play a vital role in integrating new assistive technology in classrooms. Some have acquired grants to pilot tools, including alternative augmentative communication devices such as the iPad.

Putting UDL Principles to Work

We begin to put UDL principles to work by looking at our existing district-wide instructional technology tools. Many are very worthy of serving as assistive technology supports for students with disabilities. For example:

Microsoft

Integrated into their operating systems, Microsoft includes free accessibility utilities such as magnifier, narrator, on-screen keyboard, and voice-to-text. Microsoft Word includes assistive technology features (e.g., autosummarize, thesaurus, text-to-speech, graphic organizers).

Graphic Organizer Programs

Inspiration *(http://www.inspiration. com)* and Kidspiration (*http://www. inspiration.com/kidspiration*) are graphic organizer programs that provide visual resources to enhance writing in particular. These tools can also aid in the development of other literacy skills — as well as thinking and mathematical skills (e.g., reasoning, problem-solving).

Discovery Education

Discovery Education (*http://www. discoveryeducation.com*) contains a wealth of digital media and lesson plans to enhance the learning experience of all students. It requires a paid subscription but includes both classroom and home resources such as video clips, audio files, interactivites, and lesson plans.

Type-to-Learn

Type-to-Learn (*http://www.sunburst. com*) is a keyboarding program proven effective for instructing in drill format. It provides personalized instruction as well as games and age-appropriate, real-life applications.

AIM Navigator

When necessary after existing technology resources have been considered, we explore more specialized technologies. AIM Navigator (*http://aim.cast. org/navigator*) is a free, Web-based interactive tool that facilitates the process of decision-making around making instructional materials accessible for individual students.

Bookshare

Bookshare is a service for students who have a disability that makes it difficult or impossible to read a printed book (e.g., visual impairment, reading disability). Bookshare is supported by the U.S. Department of Education, Office of Special Education Programs. This service provides a searchable online library with approximately 90,000 digital books, periodicals, and assistive technology tools. Our teaching teams register students who qualify for this service. Students are then able

to download digital text from their home computers and use Read OutLoud, a text-to-speech program donated to Bookshare members.

MyStudyBar

MyStudyBar (*http://www.rsc-ne-scotland.ac.uk/eduapps/mystudybar. php*) is a floating toolbar containing open-source and freeware applications for literacy needs such as graphic organizing, screen masking, screen magnification, word prediction, talking dictionary, text-to-speech, and speech-to-text. It can be operated from a portable flash drive and run from any Windows computer.

Free NaturalReader

Free NaturalReader *(http://www. naturalreaders.com*) is a text-to-speech program that uses natural sounding voices. It is also capable of converting digital text to audio files that students can play on a CD player or iPod.

Technology is a key factor in allowing teachers and parents quick access to the information they need, and in ensuring that students have the necessary tools to achieve. Three Village Central School District views the transition to a UDL philosophy as a vital

Technology will empower our students.

Universal Design for Learning: Ensuring Curriculum Accessibility for All

WHAT IS UNIVERSAL DESIGN FOR LEARNING (UDL)?

CAST (Center for Applied Special Technology), a nonprofit research and development organization, provides information and resources related to UDL. This is how they describe this approach to instructional planning:

"The goal of education is not simply the mastery of knowledge; it is the mastery of learning. Education should help turn novice learners into expert learners—individuals who know how to learn, who want to learn, and who, in their own highly individual ways, are well prepared for a lifetime of learning.

Universal Design for Learning (UDL) is an approach to learning that addresses and redresses the primary barrier to making expert learners of all students: **inflexible, one-size-fits-all curricula** that raise unintentional barriers to learning. Learners with disabilities are the most vulnerable to such barriers, but many students without disabilities also find that curricula are poorly designed to meet their learning needs.

Diversity is the norm, not the exception, wherever individuals are gathered, including in schools. When curricula are designed to meet the needs of the broad middle to the exclusion of those with different abilities, learning styles, backgrounds, and even preferences, they fail to provide all individuals with fair and equal opportunities to learn.

Universal Design for Learning helps meet the challenges of diversity by recommending the use of flexible instructional materials, techniques, and strategies that empower educators with the tools they need to meet students' diverse needs. A universally designed curriculum is shaped from the outset to meet the needs of the greatest number of users, making costly, time-consuming, and after-the-fact changes to the curriculum unnecessary.

UDL has three primary principles that provide the structure for these Guidelines:

■ **Principle I: Provide Multiple Means of Representation** (the "what" of learning). Students differ in the ways they perceive and comprehend the information presented to them. For example, those with sensory disabilities (e.g., blindness or deafness), learning disabilities (e.g., dyslexia), language or cultural differences, and so forth may all require a different means to approach content. Some may simply grasp information better through visual or auditory means than through printed text. In reality, no one type of representation will be optimal for all students, so providing options in representation is essential.

■ **Principle II: Provide Multiple Means of Expression** (the "how" of learning). Students differ in the ways they are able to navigate a learning environment and express what they know. For example, individuals with significant motor disabilities (e.g., cerebral palsy), those who struggle with strategic and organizational abilities (e.g., executive function disorders, ADHD), those who have language barriers, and so forth approach learning tasks very differently and also demonstrate their mastery of tasks differently. Some may be able to express themselves well in writing but not orally, and vice versa. In reality, there is no one means of expression that will be optimal for all students; it is therefore essential to provide various options.

■ **Principle III: Provide Multiple Means of Engagement** (the "why" of learning). Students differ markedly in the ways they can be engaged or motivated to learn. Some students are highly engaged by spontaneity and novelty, while others will be disengaged or even frightened by those approaches and prefer a strict routine. In reality, no one means of representation will be optimal for all students, thus, providing multiple options for engagement is essential."

CAST. *UDL Guidelines: Version 1.0: Introduction*. Reprinted with permission from *http://CAST.org*

process. Technology will empower our students. School personnel, working in partnership with a supportive administrative team, can create an innovative educational community — where each student can successfully access and meaningfully participate in all aspects of the school's curriculum.

The author would like to thank Cheryl Pedisich, assistant superintendent for educational and pupil personnel services, and Laurie DeVore, executive director of pupil personnel services. They are at the helm of this move toward individualized learning, and it is no coincidence that both of these leaders have a wealth of special education experience, where individualized, differentiated instruction is the norm.

ADDITIONAL RESOURCES

CAST. *UDL guidelines: Version 1.0: Introduction.* Retrieved from http://www.udlcenter.org/aboutudl/udlguidelines/introduction

National Early Childhood Technical Assistance Center. *Universal design for learning and assistive technology.* Retrieved from http://www.nectac.org/topics/atech/udl.asp

The Access Center: Improving Outcomes for All Students K-8. *Differentiated instruction and implications for UDL implementation.* Retrieved from http://www.k8accesscenter.org/training_resources/udl/diffinstruction.asp

Technology is a key factor in allowing teachers and parents quick access to the information they need, and in ensuring that students have the necessary tools to achieve.

A Digital Immigrant's Interactive Whiteboard Experience

SUMMARY

Even a "proponent of all things technological" finds the need to shift his pedagogical gears to make best use of the versatile interactive whiteboard. When he develops a learning community of whiteboard users in his district, everyone discovers applications and lesson ideas they wouldn't have thought of otherwise.

As a self-proclaimed geek and early gadget adopter, I anxiously awaited the arrival of my new iPad. The debate among technology pundits over the transformational effect of this "revolutionary" device had reached its climax, and I wanted to contribute actively to this discussion. Anticipation rushed through me as I unboxed it. A grin plastered my face as I presented my iPad to family members who sat in awed silence at all it could do. Everyone was impressed with it, except my three-year old son.

Within one minute of holding my iPad, my son scrolled through five pages of apps, located his favorite game, and launched it. As the sound was muted, he continued to play his game as he instinctively reached for the volume button and turned the sound all the way up. At the time, I stood there in shock. Everyone in my family needed guidance in navigating the iPad. My son just used it. I soon discovered my two-year-old daughter was equally comfortable with it. This revelation amazed me, although it should not have. My children are Digital Natives.

Digital Natives and Digital Immigrants

Thanks to high-speed Internet connections, affordable computers, and an infrastructure built during the technology bubble of the 1990s, technology has transformed our youth. In 2001, Prensky argued in *Digital Natives, Digital Immigrants*, that our educational system was not designed to teach students who have been immersed in technology from birth. While various descriptors have emerged since then, I have found this metaphor continues to describe my experience. Having spent their entire lives surrounded by and using digital technology, students today fundamentally think and process information

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John Marr, Long Beach Teachers Association

differently. They are "native speakers" of all things digital. Those not born into the digital world are "Digital Immigrants" who learn to adapt to their environment while retaining an "accent," or foot in the past. The single biggest problem "is that our Digital Immigrant instructors, who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language" (Prensky, 2001, p. 2). One technology that can assist in bridging this gap is the interactive whiteboard.

Interactive whiteboards have been a major investment in many school districts. Marzano (2009) indicates that while limited research is available on the use of whiteboards and student achievement, his work with Haystead (Marzano & Haystead, 2009), shows some achievement gains. Critics caution that whiteboards need to be accompanied by innovation in instructional design in general (McCrummen, 2010).

Often, districts present this technology as an opportunity to engage students and increase achievement. Educators are expected to integrate this technology into their curriculum. While some teachers embrace this new opportunity,

others resist. The truth of the matter is that this technology is nothing more than a tool, which — if utilized properly — can capture the interest and engagement of both teachers and students. When poorly used, this same technology can create boredom, apathy, and frustration. Negative feelings can be generated from classroom teachers who feel overwhelmed with the rapid introduction of new technology and are provided limited training on how to understand and utilize it effectively (King, 2002).

Low Tech, High Tech and New Tech

The discussion about technology in public education is often clouded by unclear definitions. Technology is a broad category, and there is a great danger in lumping all technologies together. The *New Oxford American Dictionary* defines technology as "the application of scientific knowledge for practical purposes." Using this definition, technology has been utilized in our schools for more than 100 years. Kent and McNergney provided a division in 1999 that I find helpful in

Having spent their entire lives surrounded by and using digital technology, students today fundamentally think and process information differently.

A Digital Immigrant's Interactive Whiteboard Experience

> **When poorly used, this same technology can create boredom, apathy, and frustration.**

understanding the historical development of technology — low technology and high technology. Low technology is often seen as the "traditional classroom." Simple, flexible, and quickly adapted to teacher modification, low technology includes items such as textbooks, maps, overhead projectors, and the chalkboard. High technology includes film, radio, and microprocessor technology such as the personal computer or interactive whiteboard. This technology is often seen as complex and incapable of easy modification. High technology can further be divided into two categories. All technology prior to the personal computer (such as radio or film) is classified as traditional high technology. All technology utilizing the computer (such as the interactive whiteboard or software) is seen as new high technology.

Within these contexts, issues involving teachers and technology often arise when new technology is used in a traditional manner. Digital Natives have learned to seamlessly access and acquire information from a variety of sources and through a variety of means — often through self-experimentation and discovery. Many educators, born and educated in the age of low or traditional technology, lack this playful curiosity. In fact, I have found through personal conversations that many veteran educators are fearful of "breaking" this new technology. As a result,

new high technologies are often misused or their use is limited by the lack of teacher knowledge and experimentation.

Much has been written about the phases that professionals go through in relationship to technology. I continue to find an analysis related to an early study to accurately reflect my experience. Sandholtz, Ringstaff and Dwyer (1993) described a five-phase evolutionary change in the behavior of teachers using technologies. The first phase, **entry**, found teachers with little or no experience have mixed feelings of trepidation and excitement as they encountered difficulties in discipline and resource management. The second phase, **adoption**, found increased teacher self-esteem as they use technology as a passive supplement to existing lessons. The third phase, **adaption**, found teachers focus on productivity creating increased opportunities for higher-order thinking engagement. The fourth phase, **appropriation**, found the emergence of new instructional patterns using technology is determined solely on the individual teacher's level of personal mastery of the technology. It is important to note that access to personal coaching at this level increased usage of instructional patterns. The final phase, **invention**, found the teacher's view of learning shifts toward an active, creative, and socially interactive point of view. Teachers at this level create new learning environments where knowledge is

gathered, analyzed, synthesized and constructed collaboratively. While teachers evolve at varied rates and in different ways, these phases align with my 10-year journey — navigating the five phases of technology integration — with the use of interactive whiteboards.

The Interactive Whiteboard

Interactive whiteboards are one of the most common forms of technology introduced into the classroom within the last 10 years. Developed and introduced by SMART in 1991, the interactive whiteboard is connected to an LCD projector and computer, and provides touch control of computer applications. This form of interaction creates a connection between the user and the application that personalizes the learning experience.

Interactive whiteboards were introduced into my school district in 2001. As a second-year middle school social studies teacher and proponent of all things technological, I was selected to receive one of these interactive whiteboards. During my entry and adoption phases, I found myself struggling for ideas. Focusing on the New York State Social Studies Learning Standards and the New York state curriculum guide, I began to create PowerPoint slides illustrating various curriculum objectives. While successful with this activity, over time I discovered myself using the whiteboard as a glorified overhead

projector. Class-wide interaction with the whiteboard almost never occurred. Everything I knew about instruction, firsthand and through my teacher preparation courses, did not prepare me to unlock the amazing potential of this new technology.

The interactive whiteboard required me to shift my pedagogy. One of my first experiences came during a wrap-up activity in social studies. Focusing on Social Studies Standard One of the New York State Learning Standards (major ideas, eras, themes, developments, and turning points in the history of the United States and New York), students were asked to create an illustration of one cause of the American Revolution. That evening, I selected and scanned images into an interactive presentation concerning this topic. During the next day's lesson, students were provided the whiteboard as a station from which they had to locate the best image representing a short list of event characteristics. Instead of having 24 students sit passively and watch one student engaged, groups of four students were given the opportunity to individually interact with the whiteboard. Students enjoyed the activity, and I became motivated by their enthusiasm. Over a period of time, I began to adjust my classroom layout to incorporate the whiteboard into as many activities as possible — often in small groups.

> … over time I discovered myself using the whiteboard as a glorified overhead projector. Class-wide interaction with the whiteboard almost never occurred. Everything I knew about instruction, firsthand and through my teacher courses, did not prepare me to unlock the amazing potential of this new technology.

A Digital Immigrant's Interactive Whiteboard Experience

> As I developed a learning community of interactive whiteboard users, I continued to learn of applications and lesson ideas I would never have thought of on my own.

Collaboration

Around the same time, I began offering professional development on using the interactive whiteboard to other teachers in my district. Suddenly, I was no longer alone in developing lessons. As we developed a learning community of interactive whiteboard users, I continued to learn of applications and lesson ideas I would never have thought of on my own. Helping an elementary teacher illustrate a storybook motivated me to create interactive images illustrating the Iroquois Creation Myth. During another activity, I had students taking on the roles of colonists to communicate the motives behind coming to America—and as a class we began to interactively build a colony. Each of these activities moved me from the adaption phase to the appropriation phase of interactive whiteboard use. One of the greatest lessons I learned at this time was that I needed to get out of my comfort zone and experiment. Each collaborative opportunity provided me with examples of what worked and what needed further refinement.

Each New Year of Teaching, Integrating More Technologies

Having now spent a decade using the interactive whiteboard, I have come to understand that effective implementation requires a shift in thinking about how instruction is delivered and how a classroom in organized. In this respect I agree with Prensky (2001), who said, "if Digital Immigrant educators *really* want to reach Digital Natives — i.e., all their students — they will have to change" (p. 6). Comfortably set in the invention phase, I continued to look for new ways of combining different forms of technology.

Last year I asked my students to develop a digital play on the Age of Exploration. One period was devoted to illustrating a section of the play. As students worked on creating the illustrations, each student recorded their lines on my desktop PC. At the end of the period, each illustration was digitized using my document camera. Audio and images were combined using utilities or websites such as *http://www.myplick.com*, which allows a PowerPoint to sync to an audio file to create a movie. The next day, students watched their self-created video as an introduction to the lesson. Each subsequent day, a different class video was rotated in until the students had watched five videos. Students not only participated in a shared experience, but reviewed important concepts at least *five times*. This type of ongoing reinforcement of important concepts — in different ways, through different methods — is consistent with what we know about best practices in education.

Each successful activity encourages me to incorporate technology into my

lessons in different ways. This year, my students have become historians during our Age of Exploration unit. Similar to how historians use primary sources to create narratives, students relied on primary source documents to create their own story of the first encounter between Christopher Columbus and Native Americans. Students then worked on illustrating this story using PowerPoint. These stories have been shared between classes, and utilized when discussing different interpretations of history.

Bridging the Gap

The interactive whiteboard is one tool that can help bridge the gap between Digital Natives and Digital Immigrants. But like any tool, it needs to be used appropriately and in conjunction with good curriculum and varied, effective instructional approaches. Marzano (2009), recommends that teachers organize information into small segments before developing digital flipcharts, that visuals be those that clearly focus on the important content, and that when using features such as voting devices and virtual applause, the teacher needs to focus on discussing correct answers and not letting the distraction of the features overshadow the instructional objectives.

Teachers in growing numbers are moving from traditional instructional methods to methods more appealing to Digital Natives. All change produces some element of fear and uncertainty.

Understanding the phases teachers go through in the integration of technology in their instruction can reduce this fear. With enough time, support, and commitment, teachers should be able to master any technology, and while doing so, may also discover a renewed sense of excitement for their profession.

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The interactive whiteboard is one tool that can help bridge the gap between Digital Natives and Digital Immigrants. But like any tool, it needs to be used appropriately and in conjunction with good curriculum and varied, effective instructional approaches.

Connections Beyond the Classroom – The Promise of Web Authoring Tools

SUMMARY

Web authoring tools are one of the most useful products of the new digital technologies known as Web 2.0. Find out how these user-friendly, interactive tools can be used to engage students more actively in reading and writing.

Today's students are living in a multimedia world that increasingly requires use of new digital technologies. These new technologies, often called Web 2.0 tools, are characterized by their interactivity and user-friendliness and can assist students in learning to read, write, and think critically about the world (Freeman, Freeman & Ramirez, 2008; Newkirk & Kent, 2007; Pahl & Rowsell, 2008). These technologies are highly engaging and motivating for students and teachers alike, and they represent new digital literacies needed for success (Leu, O'Byrne, Zawilinski, McVerry, & Everett-Cacopardo, 2009).

Web authoring tools are a particular kind of Web 2.0 technology which have tremendous potential for teachers and their students. The term "Web authoring tools" refers to a range of software programs that can be used to create content that can be viewed on the Internet. In this article, we examine Web authoring tools and describe how such tools can be used to improve our educational programs in a variety of ways.

What Research Tells Us

The connection between literacy and technology is increasingly important. Recent research (Leu, McVerry, O'Byrne, Zawilinski, Castek, & Hartman, 2009) indicates that students are now reading and writing as much, or even more, electronically than with conventional texts. A child's world is filled with digital information and messages (Johnson, Levine & Smith, 2009) requiring use of increasingly

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Peter McDermott, The Sage Colleges

complex reading and writing skills and strategies (Coiro & Dobler, 2007; Leu et al., 2007; Walker, Bean & Dillard, 2010). These new technologies use a variety of textual, visual, audio, and graphic formats for composing, and we believe that all children must learn to use them well to be fully literate in today's digital world.

A consistent research finding (O'Brien, Beach, & Scharber, 2007; Tarasiuk, 2010), supported by our own observations working with students, indicates that the new technologies produce sustained engagement with reading and writing. Teachers know it can be difficult to actively engage students in learning, but we have found this challenge often evaporates when using the new technologies. Our experience shows that regardless of grade level or whether we are teaching in rural, suburban, or urban settings, children find digital literacies engaging. Students consistently want to learn and are eager to use these new technologies in their reading and writing. Research indicates that student engagement is directly associated with academic achievement, and these new technologies offer wonderful opportunities for capitalizing on students'

interest in using them (Guthrie & Davis, 2003; Wigfield et al., 2008).

Students enjoy having choice in what they read and write. New technologies encourage students to insert movies, digital games, photographs and countless other items ranging from images of comic figures to videos of hip-hop celebrities into their online work. Choice helps students develop voice and ownership in their work, and it is widely associated with reading and writing achievement (Allington, 2006; Atwell, 1998; Daniels, 2002; Johnson & Blair, 2003).

Web Authoring Tools

Web authoring tools provide users with an efficient and relatively easy way to construct their own websites. Web authoring tools are similar to word processing programs as they allow users to choose from a variety of windows for composing, editing, and formatting their texts. Users construct their websites by selecting templates for design and layout, and using toolbars for composing text, adding graphics, images, photos, and other media. We

> Students enjoy having choice in what they read and write. New technologies encourage students to insert movies, digital games, photographs and countless other items ranging from images of comic figures to videos of hip-hop celebrities into their online work.

Connections Beyond the Classroom – The Promise of Web Authoring Tools

An advantage of a teacher-developed website is that it can be easily tailored to fit the specific needs of each classroom and it does not require the expertise and time of a webmaster.

have discovered positive effects from using such tools in our teaching in both rural and urban settings. These include improving communication with families and communities, supporting and enhancing students' learning in the content areas, providing authentic and engaging reasons for integrating the new literacies into classroom learning, showcasing students' work, and helping them connect with the world.

Improving Communication with Families and Community

Two years ago Debbie Dermady began a classroom website for her fifth-graders and found it encourages parent participation and improves their support of children's learning. She writes and posts weekly D-blasts ("Dermady Newsletters") and sends hard copies to the few families without Internet service. Families can access her website to obtain classroom materials, descriptions of weekly assignments, classroom schedules and rules, examples of students' work, ideas for supporting students' learning, as well as many other kinds of information that are important for today's students. An advantage of a teacher-developed website is that it can be easily tailored to fit the specific needs of each classroom and it does not require the expertise and time of a webmaster. Figure 1 presents a screen capture of Debbie's website.

Supporting Learning in the Content Areas

Debbie's classroom site contains many links to other websites for supporting student learning. For example, the social studies subsection of her website contains links to *National Geographic*, American Civil War sites, websites about music of World War I, and links to public broadcasting's resources about the Great Dust Bowl, among others. Children and their families use her website's hyperlinks to click to each subject area for supporting and enriching subject area learning.

Providing Authentic Reasons for Using the New Literacies

Real examples of reading and writing in everyday life are provided on the site. Videos and podcasts of authors reading their work and interviews of authors discussing their writing give students a sense that real people write books and draw on their own life experiences. There are many examples of students' completed work posted on the website. Her students, for example, create comics that illustrate subject area vocabulary using Animoto, and these are posted on the classroom website. Students write book reviews that are posted to her site and sometimes submitted to publishers' websites (e.g., *Scholastic*). She teaches her students to use Web 2.0 tools in appropriate ways, and she reinforces the idea that if students abuse the

Figure 1: Debbie's classroom website

Welcome to Mrs. Dermady's Fifth Grade Class!
Room 217-Guardino Elementary

Home Page

Our School Book Fair Has Begun!

NEW! Scholastic Book Club Online Ordering

There's No Place Like...HOME!

"STAR" FISH of the Week!

Emails or Monthly D-Blasts

New Halloween Video!

Kalli Dakos is coming to Visit!-Author Spotlight

Nov/Dec NIE Happenings 2010!

PBWikis-Check out our new Cape Cod Epals!

What are the KIDS and some of their TEACHERS up to now?

Monthly Happenings

Classroom Handouts-School Supply List, Summer Writing Mission and More!

New 2010 Schedule & Rules

Check out some of these COOL Websites!

Upper Canada Village 2010

Hello to our Cape Cod E-Pals...

Falmouth, MA

from the 1000 Islands!

Clayton, NY

classroom_rules_2010.doc
Download File

2010schedule-dermadyschedule.xls
Download File

Check out our Classroom Rules in this video! Just press play to view!

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technology (e.g., use inappropriate language) they will lose the right to use them in school.

A popular Web authoring tool is Weebly. *Time* magazine named it one of the 50 Best Websites in 2007 (*Time*, 2007). We find it easy to learn and use because it incorporates drop-and-drag features, requires no knowledge of HTML (a mark-up language for websites), contains pre-made designs and incorporates several positive features, including blogging and

Videos and podcasts of authors reading their work and interviews of authors discussing their writing give students a sense that real people write books and draw on their own life experiences.

options for embedding other Web 2.0 tools (e.g., podcasts, videos and screencasts). Weebly has no limits on number of pages and storage, and it does not post commercial advertisements on users' websites. Students often choose to show photographs of their favorite foods, sports, animals, singers, movies, and TV shows.

Many students we have worked with share their websites with their classroom teachers, their families, and building principal. Such website use validates students' life experiences, and this may be especially important for children and youth for whom the home-school connection needs strengthening.

Showcasing Students' Work

Debbie often embeds students' digital projects into the website. Last year, for example, she instituted a Veterans Project whereby students interviewed military veterans, developed PowerPoint slides, and presented them in the classroom. The website captured that learning experience with essays, photographs, and videos of the students interacting with veterans and traveling with them on the St. Lawrence River.

Students enjoy incorporating photography and video on their websites. Flip cameras are easy to use (point and shoot), inexpensive and generate

high-definition film that is easily edited. Mike, a new teacher we have worked with in an urban district, requires his students to create glogs (e.g., Glogster) in which voice, typing, photography and video are integrated into electronic posters.

Helping Students Connect with the World

In Debbie's rural school there is little ethnic diversity, so last year she collaborated with a former student who was student teaching in Ghana. As a result, Debbie's students were able to connect with students in a school in Ghana. Her students have corresponded with their new African friends and have learned about each other's country and community.

Considerations Related to Web Authoring

Web authoring can easily be done through classroom computers if Internet access is available. There is often no financial cost to the school district due to an abundance of free Web authoring options and shareware tools to make websites interactive and engaging. The amount of choice regarding what is included and how active students are in developing websites is very age- and teacher-dependent.

Suggestions for Getting Started with Web Authoring

Web authoring can be completed as a class, in small groups or individually. We have a few suggestions for beginning Web authoring with learners.

■ After-school clubs can be a starting point because they allow the students to build capacity, such that technology experts emerge among peers. Our experience is that student enthusiasm and interest are contagious once a core group becomes involved with Web authoring.

■ Student groups can be given choice of different activities in the content areas which require the development of materials (e.g., students develop multimedia weekly summaries from their content area studies and upload to websites with teacher guidance).

■ As students progress through school, they can be encouraged to create online websites that serve as repositories of their work. For example, students might select from among their materials for e-portfolios to document their individual achievements. High school students may decide to display their group work and individual creative works on websites, within parameters for acceptable language usage and given direction from rubrics.

With all of the emerging Web 2.0 tools, teachers need to be aware of district and school policies, including those on acceptable use of language and photos, and have a clear understanding of them. Students and parents should also agree to them in writing. Teachers need to be aware of policies regarding student use or sharing of personal information with any websites.

Final Thoughts

The new technologies are a contemporary literacy issue (Leu et al., 2009) that represents how reading and writing are used in everyday life. Digital literacy is interactive, collaborative and connective. The new digital literacies (Spence, 2009) and Web authoring tools offer authentic opportunities for engaging students in meaningful learning. The use of these new technologies will improve students' ability to read, write, and advance in each of the content areas — leading to greater success in today's world.

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Web 2.0 Tools and Websites

Animoto (http://animoto.com/)

Lets users quickly create multimedia presentations using their favorite photographs and music selections.

Flip Camera (http://www.theflip.com)

Inexpensive point-and-shoot video camera that captures easily editable, high-density film. Can also be used as a digital camera.

Glogster (http://www.glogster.com/)

Users can create colorful online posters in which texts, photos, images, podcasts and vodcasts can be embedded.

Scholastic (http://teacher.scholastic.com/activities/swyar/)

Students can post their own reviews of favorite books on this website published by *Scholastic*.

Weebly (http://education.weebly.com/)

This Web authoring site allows users to select and drag from various formats to create their own Web pages.
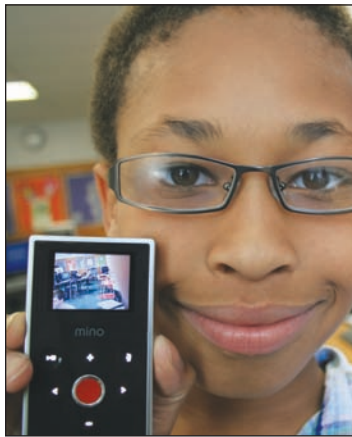
What are We Learning About Technology Integration and Professional Development?

SUMMARY

How well is technology-focused professional development helping teachers and their students in integrating technology into the educational process? A recent study by the UFT Teacher Center provides some answers.

Technology integration in today's classrooms is essential to prepare our students to compete in an increasingly digital society. As professional development providers in the field of instructional technology, how can we continue to support teachers and students in achieving the goal of seamlessly integrating technology into the educational process? What are the challenges we face? These are some of the questions that led to a recent study of the relationship between professional development practice and technology integration involving teachers, professional developers and school leaders in a group of New York City schools.

Since little research is available on the impact of technology-focused professional development on teacher learning and practice (Mouza, 2009), the UFT Teacher Center conducted a study, through an independent evaluator, to examine the impact of instructional technology professional development on teaching and learning at schools with site-based UFT Teacher Centers in New York City (Measurement Incorporated, 2010). This article presents results from this study and their implications for future professional development.

The UFT Teacher Center, now in its 32nd year, is a comprehensive professional development program operating throughout New York City's five boroughs in more than 200 school-based sites. This is a collaboration of the United Federation of Teachers, the New York State Education Department, New York City Department of Education, schools, districts, and school support organizations. In participating schools, the

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Nancy A. Mazzella, United Federation of Teachers

UFT Teacher Center staff support teaching and learning by providing a wide range of job-embedded professional development opportunities such as one-on-one coaching, in-classroom support, demonstration lessons, co-teaching, professional study groups, and work sessions. Additionally, the UFT Teacher Center provides a variety of citywide networks, conferences, and seminars — open to all New York City educators.

This study analyzed data collected from surveys administered across all grade levels at 40 UFT Teacher Center partner schools that received instructional technology professional development and support. The main purposes of this study in relation to exploring teacher, Teacher Center staff, and administrator perceptions, were to:

■ examine the type, amount and quality of educational technology professional development in *preparing teachers to integrate technology* into their instructional practice,

■ investigate the use of technology to *differentiate instruction* for students,

■ investigate the impact of technology professional development on the *instructional practices* of participating teachers, and

■ investigate the *impact of technology professional development* on student learning.

Three surveys were used to gather data. One survey was administered to teachers who received a significant amount of technology-related professional development from UFT Teacher Center staff. It assessed the types of instructional technology professional development received by teachers, teacher satisfaction and changes in knowledge, skills and instructional practice as a result of UFT Teacher Center professional development. Teachers were also asked about the perceived impact of educational technology on student learning.

A second survey, administered to UFT Teacher Center staff, collected information on the instructional technology professional development provided to teachers. It also addressed the effectiveness and relevance of the

UFT Teacher Center partner schools receive the support of a full-time coach who provides a wide range of job-embedded professional development opportunities — such as one-on-one coaching, in-classroom support, demonstration lessons, co-teaching, professional study groups and work sessions.

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> While it is important to provide training sessions to help teachers learn how to use specific hardware and software, professional development must go further and provide *ongoing* support.

professional development and support UFT Teacher Center staff received from the UFT Teacher Center to prepare them as providers of technology professional development.

A third survey was administered to school leaders. It assessed the impact of the program from the perspective of school leadership.

Preparing Teachers to Integrate Technology

The goal of successful technology professional development is its integration into teaching to impact student learning. Before we can begin to discuss technology integration, however, we must consider its definition. "Technology integration" can, and often does, mean different things to different people. For the purposes of this report, we will use the definition offered by the Intel Teach Program (Intel Teach Program, 2009), which defines technology integration as the process of teachers and students routinely and seamlessly using technology resources and technology-based practices to enhance learning.

For teachers to integrate technology routinely and seamlessly, they must have access to technology. As one UFT Teacher Center staff member stated, "Teachers must feel they have access to technology on a regular basis to plan it into their lessons." An

overwhelming 94% of respondents who were UFT Teacher Center staff reported that access to the Internet in their school was "moderate to great." More than 80% reported that access to desktop computers and printers was "moderate to great." On the other hand, the results were less promising when asked about web-based video resources, digital recording devices and licensed copies of instructional software. Only 59% reported that access to Web-based video resources was "moderate to great." Slightly more than half indicated access to digital recording devices was "moderate to great," and 60% indicated access to licensed copies of instructional software was "moderate to great." In other words, access was reported to be greatest for basic Internet access, computers and printers, but these do not reflect the types of technologies many students actually use in their everyday lives, such as handheld devices and Web 2.0 tools. As technology evolves, we must continue to examine not only the amount of technology accessible to teachers and students, but the *type* of technology as well.
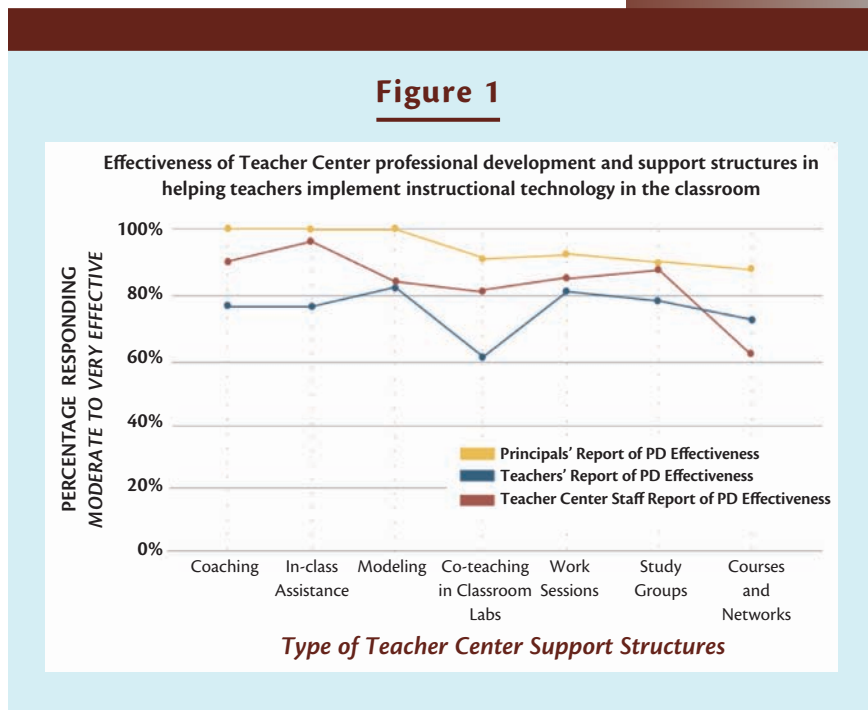
Once teachers have access to technology, such as interactive whiteboards, they need to know how to use the technology before they can begin to integrate it into their teaching. Helping teachers learn how to use specific

hardware and software tends to be the focus of short-term workshops or training sessions. While it is important to provide training sessions to help teachers learn how to use specific hardware and software, professional development must go further and provide *ongoing* support. As Fishman (2006) noted, learning how to use technology is not the same as learning how to *teach* with technology — and the findings of this study are consistent with this understanding.

Figure 1 illustrates the effectiveness of support structures in helping teachers implement instructional technology in the classroom as reported by teachers, principals and UFT Teacher Center staff. More than 80% of respondents who were teachers rated modeling as a "moderate to very effective" way to help them implement integration of instructional technology into the classroom. This was followed closely by work sessions, study groups, coaching, and in-class assistance — in terms of percentage of respondents rating the approach as "moderate to very effective." It is noteworthy that a fairly high percentage of all three groups (i.e., principals, teachers, Teacher Center staff) rated the following as "moderate to very effective": coaching, in-class assistance, modeling, work sessions, and study groups.

It should be noted that even with the support they have received, two-thirds

Figure 1

Effectiveness of Teacher Center professional development and support structures in helping teachers implement instructional technology in the classroom

Type of Teacher Center Support Structures

of teachers indicated they needed additional support and professional development to further implement technology practices in their classrooms. These findings confirm the need for ongoing professional development, and are especially noteworthy in tough economic times when professional development may seem like a luxury rather than a necessity.

The study's results also indicate some interesting differences in the perceptions of teachers and principals concerning the impact of professional development activities on the level of teacher preparedness to integrate technology (see Figure 2).

What are We Learning About Technology Integration and Professional Development?

Figure 2

Level at which TCS professional development and support prepared teachers

Principal: 33%, 10%, 0%, 57%

Teacher: 47%, 14%, 3%, 36%

Teacher Center Staff: 34%, 0%, 17%, 49%

Legend: Not at all, Somewhat well, Moderately well, Very well
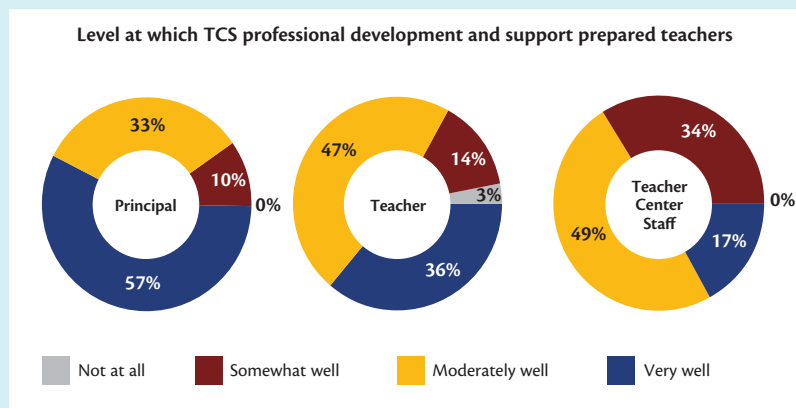
While 36% of the teachers surveyed believed they were "very well" prepared to integrate instructional technology into their classroom practice, 57% of the principals believed that teachers were "very well" prepared. A possible explanation for these differences might be that teachers and principals have different definitions of technology integration. Further conversations among teachers and administrators might lead to a common definition, which could help establish clear expectations and guide future professional development.

Using Technology to Differentiate Instruction

The data suggest that teachers are focused on new and improved ways of implementing differentiated instruction. More than 70% of the teachers reported that as a result of the instructional technology support and professional development provided by UFT Teacher Center staff, they are now:

- creating new and different ways for students to take in information;

- differentiating for readiness levels and creating materials that match both readiness levels and interests;

- differentiating for interest; and

- creating alternate ways students can demonstrate what they know and have learned.

Although these results indicate that the professional development provided by UFT Teacher Center staff helped teachers differentiate instruction, both teachers and UFT Teacher Center staff overwhelmingly report the need for additional professional development in this area. This makes sense since new technologies — assistive technologies in particular — are being introduced at a rapid pace.

Impact on Instructional Practices

The study asked teachers, principals and UFT Teacher Center staff to consider technology implementation across six skill levels from beginning to more advanced stages (see Table 1). Most teachers reported that they were in the early to middle levels of technology implementation; others reported a

Table 1

Skill level in implementing instructional technology in the classroom

Skill Level	Level of Implementation	%
Level 1	Teachers are still learning about ways of using technology for instruction; they have not yet used it.	8
Level 2	Teachers have begun using technology for instruction, but usage is uneven as they have not yet mastered all components.	28
Level 3	Teachers are using technology for instruction routinely and have encountered minimal implementation problems.	25
Level 4	Teachers' technology knowledge is fully integrated in the instructional program. It is a normal, ongoing part of the way teachers teach.	18
Level 5	Teachers are now exploring ways of refining their use of technology to increase impact on students (e.g., differentiate instruction).	14
Level 6	Teachers are collaborating with other teachers to expand the impact of technology on all of our students.	7

higher level of implementation. This outcome has implications that are important for the design of professional development. Clearly, professional development needs to be differentiated to accommodate teachers at the beginning stages of implementation as well as those at the more advanced stages.

When Teacher Center staff were asked to reflect upon the extent to which technology-related professional development appeared to affect the way teachers instruct, assess and think about their teaching, the results were surprising. More than 70% of Teacher Center staff reported that, as a result of technology professional development, teachers appear to have altered the way they assess and monitor student progress, have changed the way they group students for instruction and have altered the content of their instruction — to a "moderate or great extent." Also, 77% of Teacher Center staff reported that the way teachers feel about professional growth opportunities was affected (in a positive way) to a "moderate or great extent." These results imply that instruction will be influenced when sufficient support is given.

Nearly 60% of teacher respondents reported an increase in grouping for differentiated activities. Fifty-four

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> A successful professional development program must consider not only how to facilitate change in teachers' knowledge and skills but also how to facilitate change in teachers' beliefs and preconceptions.

percent of teachers reported an increase in the use of project-based learning to monitor student progress. In fact, the only teacher-led activity that did not show an increase was using lecture (which many would argue is overused).

While these findings are promising, even more promising are the results indicating that a high percentage of teachers are implementing more student-led instructional activities. More than half of teachers reported an increase in having students teach or help other students. Close to half reported an increase in having students work on long-term projects and work in collaborative teams. This shift is aligned with the National Educational Technology Standards (NETS) as well as the Common Core State Standards that require students to use a variety of digital media and environments to communicate and work collaboratively.

Impact on Student Learning

This study examined perceptions related to the impact of the uses of technology on student learning. While this is a difficult variable to consider separately, close to 40 % of teachers would attribute technology use to higher student engagement and excitement about learning. Approximately 30% believe that students appeared better able to

relate their learning to real-world applications. These outcomes are important to follow and increase, since these areas are directly related to effective teaching in general, as well as attaining Common Core State Standards — that is, to better prepare students for college and careers.

The study also considered the amount of technology-related professional development and support teachers received to assess the role it had played in reported student benefits. The data indicate that the more instructional technology professional development and support a teacher receives, the more the teacher incorporates technology in the classroom. Teachers who use technology to a greater degree observe and report greater benefits to students. Clearly, increasing the amount of professional development and support to teachers is key to increased benefits to students.

Implications

As Joellen Killion (2003) points out, it is widely believed that if teachers attend a workshop they can begin to immediately implement new strategies in their classrooms. It may be thought that increasing the teacher's knowledge and skills related to technology integration will lead automatically to a change in behavior. However, as Killion notes, professional development is

most successful in increasing student learning when it targets changes over time — not only in knowledge and skill, but also in attitude, aspiration, and behavior. Therefore, a successful professional development program must consider how to facilitate change in teachers' knowledge, as well as teachers' beliefs and preconceptions. It is difficult, if not impossible, to impact teacher beliefs in a one-time workshop. That is why ongoing professional development is essential. The overarching goal of technology professional development should be to provide teachers with opportunities to observe, practice and reflect on new technologies and it should be conducted over extended periods of time.

Because of the rapid rate of technological change, instructional technology professional development should focus on helping teachers develop skills that enable them to continually explore new and unfamiliar tools instead of concentrating only on specific hardware and software. It must be focused not only on the equipment but also on the strategies that support student learning — strategies that enable teachers to teach differently and support inquiry and collaboration.

As this study indicates, teachers are at varying levels of expertise in technology implementation. Professional development must be designed to meet the needs of these various levels. Just as

teachers need to differentiate instruction for students, professional learning needs to be differentiated to meet the needs of teachers.

Technology can make a difference in supporting student learning, however, this cannot happen by merely providing classrooms with the latest equipment. Instructional technology integration will occur across all grade levels and in all content areas when it is supported by professional development that is differentiated and sustained over time.

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Just as teachers need to differentiate instruction for students, professional learning needs to be differentiated to meet the needs of teachers.

Envisioning Virtual Learning in New York State: The Consortium Model

SUMMARY

Two longtime advocates of educational technology say there is no reason to fear virtual learning — if it's done right.

Unkempt, bleary-eyed teens in their pajamas sitting alone before a computer, cheating on their homework while playing mindless video games. Teachers on roadsides holding "will teach for food" signs after being replaced by online content providers who have automated the teaching process through computerized examinations. These are two images that come to mind for many of us when we hear "virtual learning." The gut reaction is resistance and skepticism.

But as educators who are passionate advocates of educational technology (Sherman) and have taught online courses for over a decade (Eaton), we embrace the opportunity to explore the development and implementation of a state-sponsored virtual high school (VHS). Indeed, fighting virtual learning doesn't make sense. The latest New York State Education Department (NYSED) technology plan, approved by the Board of Regents in November 2009, includes an initiative to establish a state virtual high school. Further, the state's successful Race to the Top (RTTT) application references creating a VHS for all students who want to participate in school anytime, anywhere, with a goal to reach up to 20,000 students by 2014 ("New York State," 2010). The creation of a state VHS is very real — and has the potential to transform our schools.

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Rod Sherman, Plattsburgh Teachers Association

What is Virtual Learning?

The term *virtual high school* often conjures up some nebulous space on the Internet where students can get their diploma entirely online. That's not the kind of education we support; instead, we support a statewide virtual learning network of existing institutions that supplements, not supplants, what's currently happening in our schools — a virtual consortium that offers core and elective courses of the highest standards.

Virtual learning refers to "technology-mediated teaching and learning that occurs when teachers and students are not in the same place" (*AFT Higher Education*, 2003, p. A-1), with most work happening asynchronously online. The term *virtual high school* generally refers to any organization offering secondary education courses or curricula in the form of online or hybrid classes. State VHSs are defined by the Education Commission of the States (Bush, 2008, para 1) as "state-led schools created by state legislatures or state-level departmental agencies" and typically administered by a state's education department.

Most state VHSs are available only to in-state students enrolled in public schools and are supplemental; that is, they augment existing course offerings and do not grant diplomas (exceptions include Arizona and North Dakota). Teachers in almost all VHSs must hold the same credentials as public school teachers. Some state VHS programs cap the number of credits students can take online, but while they may not restrict student participation, many districts use the VHS only for making up course credit (i.e., "credit recovery"—an option for a student who fails a high school course[s]), for electives, or to reach certain student populations such as Advanced Placement (AP) or suspended students. A state VHS is distinct from online charter schools/cyberschools, which more commonly enroll students full time, are run by private for-profit companies, may not be accredited, and rely on parents to serve as "in-home instructors." A state VHS is also distinct from dual credit or other programs in which high school students take online courses for college credit.

We prefer the term *virtual learning* to *virtual high school*, as we are primarily

> We support a statewide virtual learning network of existing institutions that supplements, not supplants, what's currently happening in our schools.

Virtual learning can help ensure high educational quality because it encourages pedagogical and technological advancement in our schools as teachers use a variety of modalities and emerging technologies to keep students engaged.

focused on ensuring students have access to quality virtual learning opportunities. When New York does develop a state VHS, it should be just one component of our current public schools to expand learning opportunities and offer resources to encourage access and increase student retention.

Why Embrace Virtual Learning?

While we believe that virtual learning has transformative potential and offers academically sound possibilities for enhancing traditional instruction, we are well aware of its critics. Educators fear it might result in loss of educational rigor or social interaction for students, or loss of jobs. Admittedly, research is ongoing as to the effectiveness of virtual learning (Cavanaugh, Gillan, Kromrey & Blomeyer, 2004; "Evaluation," 2010; "Meta-analyses," n.d.), and a recent *New York Teacher* poll ("We asked/you said," 2010, para. 3) showed 72% of respondents opposed to a state VHS because "online courses are not as effective as face-to-face classroom learning; students need genuine personal interaction to learn."

As noted in "Virtually Successful: Defeating the Dropout Problem through Online School Programs" (Roblyer, 2006. p. 35), critics also point to high dropout rates and practices they find unacceptable such as

Florida Virtual School reading teachers' e-mails "to judge the tone of communication between teachers and students," or Idaho Digital Learning Academy's practice of paying teachers for each student who completes the course (p. 35). Others fear that a state VHS might be structured as an online charter school (see NYSSBA, 2009), competing with regular public schools for students (Bleyaert, 2009). Currently, only 180 of more than 4,500 U.S. charter schools are online charter schools (Center for Education Reform, 2009).

Given the promises and potential pitfalls of a state VHS, we believe that virtual learning should be shaped locally and that educators, students, and parents must be integrally involved in all decisions. This is why, consistent with good collaborative labor practices, it is imperative that the planning for such a project include, where appropriate, the collective bargaining process. Most importantly, we believe that the motivation for participating in virtual learning should be improving access to coursework based on high standards of educational quality.

Virtual learning helps to ensure high educational quality because it encourages pedagogical and technological advancement in our schools as teachers use the variety of modalities and emerging technologies to keep students engaged. Virtual learning, by its

very structure, requires more active and participatory learning. It also recognizes that learning can be less effectively measured by "seat time" than by successful development of skills and comprehension of content.

Virtual learning also has the potential to improve access to a wide range of learning opportunities. It gives students more choices for how to learn since it operates on multiple modes of instruction — text, video, audio — and gives students access to learning opportunities that might otherwise be unavailable (e.g., students can take classes online that aren't offered in their district; suspended students can take classes online). Virtual learning can also accommodate students across a range of physical and learning characteristics in a way that encourages equity with peers.

Thus, if virtual learning is integrated effectively into our schools to enhance our current class models, greater strides may be made toward closing the achievement gap, reducing student attrition, and improving graduation rates.

National and State Perspectives

Virtual high schools are nothing new. One of the first secondary virtual schools, Virtual High School, Inc., was opened in fall 1997 by the

Hudson, MA, Public School System and the Concord Consortium. Florida Virtual School, the country's first statewide online public high school, and Utah's Electronic High School were established in the mid-1990s. "Keeping Pace with K-12 Online Learning: A Review of State-Level Policy and Practice, 2009" reported that state virtual schools existed in 27 states, and 45 of 50 states had a state virtual school or online initiative, full-time online schools, or both (2009).

While New York currently has no state-administered VHS, individual schools have participated in virtual learning for years via videoconferencing, typically in conjunction with their local BOCES. A good number have already ventured into online learning. As of August 2010, for example, Virtual High School, Inc., listed 43 participating New York schools ("Participating schools," n.d.).

In January 2010, however, the Regents Statewide Learning Technology Plan (Steiner, 2010) indicated that the University of the State of New York (USNY) "will provide learning technologies that change how students learn, what they learn, and why they learn" (Attachment A, para. *3*) and that "multiple environments will exist for teaching and learning, unbound by place, time, income, language, or disability"

> Virtual learning can also accommodate students across a range of physical and learning characteristics in a way that encourages equity with peers.

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(Attachment A, para. 5). Further, "students will access learning resources anywhere, anytime through the use of technology" as "the classroom…will be a workspace for teachers and learners but will not always be a physical space" (Attachment A, para. 5). For more than a decade, educators throughout the state have discussed virtual learning, and many educators believe that, rather than adopt the model of other states, New York should forge its own path.

Utilizing the Expertise of New York State Teachers: Creating A Virtual Consortium

Below we outline our vision for a virtual consortium model, which would work best given the complexity of the many educational agencies that fall under the purview of the University of the State of New York (USNY).

This model should operate on a reciprocal sharing of resources among individual educational institutions that maintain local autonomy in choosing if and how to participate in the network — consistent with Section 100.11 of the Regulations of the Commissioner of Education (participation of parents and teachers in school-based planning and decision-making) ("100.11 Participation," n.d.). In addition, this virtual consortium would

enable equitable access of participating districts, consistent pedagogy and teacher quality, alignment to state standards, and flexibility as it brings together individual institutions under one centralized authority while harnessing the state's collective power.

Perhaps most importantly, the virtual consortium could be financially sustainable because it capitalizes on the resources that already exist in New York state. Here are some possibilities:

■ Participating districts could identify a teacher who has volunteered for professional development to develop and teach an online course as part of her or his contractual load.

■ Professional development could be provided by a regional NYS Teacher Center. Individual teachers in participating districts would develop the course according to state-aligned standards and then receive training, perhaps online, on the pedagogy of virtual learning as well as the software system being used. Costs for districts would be shared using a BOCES Cooperative Services (CoSer) agreement ("BOCES of New York State," 2010).

- Local BOCES could serve as the consortium administrator, with school districts deciding locally whether to join. BOCES would provide the hardware and software for online course implementation, and make a catalog of available virtual consortium courses.

- Participating districts could also identify a teacher to serve as a virtual consortium facilitator to assist virtual learning students within each school.

- Each district could determine the parameters of student involvement (e.g., whether to use consortium courses only for credit recovery or AP classes). Again, for a district's students to participate in these online courses, the district must commit to having one of their own teachers offer a virtual consortium course; this is a reciprocal agreement.

Consider a hypothetical example: Auburn High School offers an elective course on the geology of the Finger Lakes but sees a decline in student participation. The district could opt to train a teacher to offer the course via the virtual consortium so it would be available, with a maximum enrollment of 20, for any participating district including the students at Auburn. Also, say that Plattsburgh High School offers a course in Farsi. If facing similar declining enrollment, the Farsi teacher could voluntarily train to offer the course online, which would preserve the Farsi course at Plattsburgh just as it preserved Finger Lakes geology at Auburn — and at the same time both courses are now available to students in other participating districts. This scenario could be replicated throughout the state, with a wide variety of core and elective courses offered to students.

This virtual consortium model is similar to that of programs like Virtual High School, Inc., but with two notable differences: quality control and cost control. For example, Virtual High School Inc. matches teachers and students across state and international lines. While there are merits to this practice, New York could maintain greater quality control by employing New York State certified educators to teach to the New York State Learning Standards.

Second, there could be considerable cost savings under this model. New York could leverage its resources (i.e., BOCES, teacher centers) to significantly lower costs, making it a more compelling option. This model would allow New York to avoid being at the mercy of an organization that can unexpectedly raise prices, affording greater cost control to our state.

> If virtual learning is integrated effectively into our schools to enhance our current class models, we might make strides toward closing the achievement gap, reducing student attrition, and improving graduation rates.

Envisioning Virtual Learning in New York State: The Consortium Model

Individual schools in New York have participated in virtual learning for years via videoconferencing, typically in conjunction with their local BOCES, and a good number have already ventured into online learning.

We should envision a reciprocal network of teachers and students across the state who work together to provide and receive virtual learning in this win-win-win plan. Students win with more course options and learning opportunities, teachers win by sharing their knowledge more widely, and districts win as they maintain high standards in a financially sustainable model that requires no special state legislation. All good reasons to consider this model!

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For more than a decade, educators throughout the state have discussed virtual learning, and many of us believe that, rather than adopt the model of other states, New York should forge its own path.

Glossary

3D software
Programs used to create three-dimensional images to model objects such as plants or internal organs.

App
Shorthand for an Application program — software that runs on a computer — including mobile devices. In the generic sense, a standalone type of software.

Assistive technology
Technology-based products and services that enhance the lives of people with disabilities. Examples include speech recognition software, specialized keyboards, and screen readers.

Basic Interpersonal Communication Skills (BICS)
Language skills used in social situations — that is, day-to-day language. These skills usually develop within six months to two years when learning a new language.

CDOS
The Career Development and Occupational Studies Standards for New York State.

Cognitive Academic Language Proficiency (CALP)
Language skills related to subject area content (i.e., listening, speaking, reading, and writing about the content). It is believed to take approximately five to seven years to become proficient in these skills when learning a new language.

Course management system
Web-based system that provides a variety of tools such as communication, assessment, uploading content, and collecting and organizing student grades.

Digital flipcharts
Can be used to organize ideas and other information. Can capture handwritten notes, text, pictures, screenshots and diagrams. Allows user to save and distribute content.

Digital immigrants
Those who did not grow up fully immersed in technology, but rather, adopted technologies later.

Digital natives
Those who grew up immersed in technology (e.g., Internet, cell phones, video games).

Digital storytelling
Using computer-based tools to tell stories often using a combination of images, text, video, music, or recorded narration.

Digital whiteboard
A projector and display which allows the manipulation of images and other content. Can record actions digitally through a touchscreen.

Document camera
Has replaced overhead projector in some classrooms. It captures image in real time and can be used to display objects for a large group. It is mounted on an arm which is placed over the image or object to be displayed.

FCC E-rate Program
The Schools and Libraries program, also known as the Federal Communications Commission E-rate program. This program provides discounts on eligible telecommunications, Internet access, and internal connections to schools and libraries.

Glog
A graphical blog. This is a multimedia poster that can combine graphics, music, photos, text and other types of information. It can be shared with others through a link.

Podcast
Audio files that can be released by the author and downloaded by others. This process can be automated so that new files are downloaded automatically. Files are then stored on a computer or other device such as an MP3 player. It can be compared to a magazine in the sense that you can subscribe to a podcast. A vodcast is the video version, but some consider the term podcast to cover both video and audio.

Screencast
A screencast is also known as a video screen capture. This is a digital recording of what is displayed on a computer screen, and can include audio as well.

Social networking site
Functions as an online community. This often includes individual profile pages to learn about and communicate with other members. Social networking sites may focus on a hobby or interest, or may be focused around individuals connecting with family and friends.

Tablet
A tablet is a wireless, portable personal computer with a touch screen. It is typically smaller than a notebook computer but larger than a smart phone.

Glossary

Technology integration
Using various forms of technology across content areas to support curricular goals.

Universal Design for Learning
A set of principles and practices related to ensuring that all students have access to curriculum materials and assessments. This is opposed to a "one size fits all" approach.

Virtual consortium model
Virtual learning network of existing institutions that supplements, not supplants, what's currently happening in schools.

Virtual learning
Teaching mediated through technology (i.e., students and teachers are not in same location).

Vodcast *(see Podcast)*
A vodcast is the video version, but some consider the term podcast to cover both video and audio.

Voting device
Handheld tool that can be used to obtain individual feedback from students. Results can be immediately recorded, calculated and projected onto a screen for classroom display.

Web 2.0
Category of new Internet technologies that focuses on the individual as an active contributor as opposed to a passive consumer. Examples include social networking sites, blogs, and wikis.

Web authoring tools
Tools which allow a person to develop Web pages easily — without having to learn the HTML scripting language.

Wiki
A website that comprises the collective work of many authors. Can allow a person to edit and comment on the work of others.

Resources

ADDITIONAL TECHNOLOGY INTEGRATION RESOURCES

In addition to the list below of Additional Resources, included also are NYSUT's Principles for Taking the Lead in Defining Excellence, for both P-12 and Higher Education, and the International Society for Technology in Education (ISTE) Standards, which are reprinted with permission.

U.S. Department of Education

Transforming American Education: National Education Technology Plan 2010.
Office of Educational Technology.
Calls for applying advanced technologies to improve student learning.
Presents five major goals in the areas of learning, assessment, teaching, infrastructure and productivity.
http://www.ed.gov/sites/default/files/netp2010-execsumm.pdf

Teacher's Guide to International Collaboration on the Internet
The purpose of this guide is to assist teachers in reaching out globally. This is an online resource with links relevant for elementary, middle and high school projects. This guide also connects teachers with organizations that are involved with international education by use of Internet.
http://www2.ed.gov/teachers/how/tech/international/index.html

Teachers' Use of Educational Technology in U.S. Public Schools: 2009.
Gray, L., Thomas, N., and Lewis, L. (2010). (NCES 2010-040). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.
This report provides national data related to the availability of educational technology in public elementary and secondary settings, as well as the use of this technology.
http://www.nces.ed.gov/pubs2010/2010040.pdf

Center for Implementing Technology in Education (CITEd)

CITEd identifies evidence-based, promising, and emerging practices that assist schools and practitioners to adopt and implement technology. CITEd is funded by the U.S. Department of Education and provides innovative online technical assistance tools, professional development, and communities of practice.
http://www.cited.org/index.aspx?page_id=8

Resources

New York State Education Department

Regents Statewide Learning Technology Plan

This Plan was approved by the Board of Regents at the February 2010 meeting. Its goals include the areas of digital content, digital use, digital capacity and access, leadership, accountability and funding. This plan is designed to utilize the many resources of the University of the State of New York.
http://www.p12.nysed.gov/edtech/

Accessible Instructional Materials (AIM)

The Individuals with Disabilities Education Act (IDEA) requires school districts to provide materials that are accessible to students who are blind or otherwise unable to use printed materials. Instructional materials are defined as textbooks and related core materials such as workbooks. This NYSED site provides information on accessible formats for materials—including links to the National Instructional Materials Access Center (NIMAC). NIMAC is the repository where NIMAS files are stored. NIMAS stands for the National Instructional Materials Accessibility Standard. NIMAS is a technical specification for accessible files.
http://www.emsc.nysed.gov/specialed/aim/

NYSED Teaching with Technology

Teaching with Technology provides links to resources such as the Consortium for School Networking, Classrooms at Work, and Digital Video for Education.
http://www.emsc.nysed.gov/technology/resources/teaching.html

Organizations

International Society for Technology in Education (ISTE)

ISTE is a nonprofit membership association which seeks to improve teaching, learning, and school leadership by advancing the effective use of technology. ISTE is the home of the National Educational Technology Standards (NETS), the Center for Applied Research in Educational Technology (CARET), and the National Educational Computing Conference (NECC).
www.iste.org

The New York State Association for Computers and Technologies in Education

NYSCATE is an affiliate of ISTE. This is a non-profit organization of educators and administrators in New York state dedicated to furthering the use of technology in schools.
http://www.nyscate.org/aboutus.cfm

Other Resources

New York State Teacher Centers

The Teacher Center Network continues to be recognized as an effective vehicle for information about, and training in, the use of technology for instruction. Public-private partnerships with the network have been strengthened and expanded. The Teacher Center network executes a variety of statewide public-private partnerships designed to bring high quality technology resources to P-16 educational institutions such as Verizon Thinkfinity, the Online Academy, SAS Curriculum Pathways, and now Google Apps.
http://www.nyiteez.org/NYteachercenters/homepage.htm

American Federation of Teachers: Recommended Classroom Materials

Links to recommended materials available on the Web. Sorted into topics that can be used as lessons or supplements.
aft.org/yourwork/tools4teachers/materials.cfm

National Education Association: FREE Technology and Media Literacy Resources

Links to free technology and media literacy resources. These are listed by grade level: Pre-K, Elementary School, Middle School, and High School.
http://www.nea.org/tools/40699.htm

The Word and the World: Technology Aids English-Language Learners.
Smart, M.P. (2008). Retrieved from *Edutopia.org*
Author describes approaches at Cinnabar Elementary School in Petaluma, California. Teachers use an array of different types of technologies to enhance the achievement of students who are English language learners. These are one-to-one approaches as well as multi-week class projects. The goal is to increase skills such as the acquisition of phonics, vocabulary, fluency, and comprehension skills.
http://www.edutopia.org/technology-software-english-language-learners

The Practical and Fun Guide to Assistive Technology in Public Schools.
Bugaj, B., & Norton-Darr, S. (2009). Washington, DC: International Society for the Technology in Education.
This guide offers information related to technological tools and strategies to assist students with disabilities. Topics range from evaluation and team building to implementation strategies for students. Focus is on practical information for students, families, IEP teams and Assistive Technology professionals.

Resources

Meaningful Technology Integration in Early Learning Environments.
The National Association for the Education of Young Children/Beyond the Journal.
(September 2008).
This article provides an example of the integration of several technologies into project-based curriculum for young children. Examples include digital whiteboard, document camera, and less expensive technologies such as digital cameras and e-mail. Authors state that such tools can support a curriculum that is learner-centered and play-oriented.
http://www.naeyc.org/files/yc/file/200809/OnOurMinds.pdf

Differentiating Instruction with Technology in Middle School Classrooms.
Smith, G. E. & Throne, S. (2009). Washington, DC: International Society for the Technology in Education.
Authors focus on different interests, backgrounds, and goals that students have and how differentiated instruction through technology can make instruction effective and engaging. Sample activities across content areas are offered.

Web 2.0 How-To for Educators.
Schrum, L. & Solomon, G. (2010). Washington, DC: International Society for the Technology in Education.
The authors discuss Web 2.0, the second generation of the World Wide Web. Links are made to student engagement, creativity, and higher order learning skills. This focuses on the what, when and why of specific tools such as blogs, wikis, social networking, and Google Earth.

Tar Heel Reader
This site is a resource for using and making books for all levels of literacy and many different languages. This is provided by the Center for Literacy and Disability and the Department of Computer Science at the University of North Carolina at Chapel Hill. This site can be particularly helpful for finding age-appropriate short digital books for students with developmental disabilities.
http://tarheelreader.org/

Library of Congress

Available materials include a growing collection of photographs, books, maps, sound recordings, and other materials related to online research. The Library of Congress provides one of the largest sources of high-quality content (noncommercial) available on the Internet.
http://www.loc.gov/library/about-digital.html

Public-Private Partnerships in Technology:
NYS Teacher Centers

Online resources for teachers and students are an integral component of the educational enterprise, and when used effectively, can have a significant impact on instructional design and student learning. Yet the sheer volume of resources and the varying quality can be problematic. The following partnerships between teacher centers and the private sector have developed steadily over the years, and provide resources that are high quality and easily accessible to busy teachers. Each partnership program:

- supports integrating technology and curriculum across core content areas;

- has standards-based content delivered through lessons, web resources, and student activities to support a learner-centered approach;

- ensures the successful delivery of professional development by providing the teacher with an all-inclusive plan including lesson design and details, objectives, assessment strategies and enrichment activities; and

- can be used "as is" or "mix and match" to meet student, classroom and curricular needs.

Many partnership professional development programs are delivered in traditional face-to-face classes and electronically using tools like Moodle, Elluminate and SafariLive. These partnership programs are open to all New York educators through their local teacher center — and literally represent a "who's who" of the best in the area of technology.

ThinkFinity

ThinkFinity (formerly MarcoPolo) project is a partnership with Verizon bringing standards-aligned content materials to teachers, which includes 2,500 lesson plans and more than 60,000 learning objects created and vetted by national professional organizations. More than 22,000 teachers in New York have been trained through the teacher centers to integrate these free resources into their curriculum. Specialized trainings are available for using the content with interactive whiteboards. Trainings are also available which focus on special populations, as well as parents. The unique New York state ThinkFinityNY site *(www.thinkfinityNY. org)* gets well over 1.5 million hits per year, a testimony to both the quality of the content and the professional development. Verizon estimates that its contribution toward the NYS public/private partnership is well over $800,000 per year.

Intel Teach

The teacher center partnership with Intel has made it the roll-out leader in New York state for the Intel Teach program. These courses provide teachers and administrators with a deep understanding of how to integrate technology appropriately into their classrooms, evaluate project-based learning activities and ensure participation by all students. Teacher centers have prepared master trainers who provide end-user training throughout the state. Two of the courses, delivered either face–to-face or online, are available for graduate credit through a partnership with the New York Institute of Technology (NYIT).

Resources

SAS Curriculum Pathways

SAS Curriculum Pathways *(www. sascurriculumpathways.com)* and New York state teacher centers have partnered to deliver professional development and training that will support the integration of high-quality, secondary resources in classrooms. Curriculum Pathways is designed to enhance student achievement and teacher effectiveness by providing free, award-winning, Web-based curriculum resources in math, English language arts, science, social studies and Spanish. The program uses a broad range of instructional strategies and techniques, targets higher-order thinking skills and employs a learner-centered approach. The Teacher Center Technology Committee has arranged for the creation of a master account for every school district in New York state. SAS estimates that this partnership brings $5 million in resources to New York's schools.

NYIT Educational Enterprise Zone

The NYIT Educational Enterprise Zone, in cooperation with New York state's teacher centers, brings hundreds of live, interactive sessions connecting schools and libraries to museums and cultural centers throughout the state, country and world via Web 2.0 and videoconferencing.

Content providers include the NY Hall of Science, Albany Institute of Art and History, the Smithsonian, the Metropolitan Museum of Art and the Museum of Chinese in America. A full list of partners can be found at: *http://www.nyiteez.org/*

Oracle's ThinkQuest

To bring the skills of invention, creation and collaboration to schools, teacher centers have partnered with NYIT and the Oracle Foundation to implement Oracle's ThinkQuest *(www.thinkquest.org)* program. This partnership will collaborate with associated Boards of Cooperative Educational Services (BOCES) to train 2,000 teachers on how to integrate 21st-century skills instruction and project learning into their curricula using ThinkQuest. ThinkQuest's powerful professional development model will enable educators to integrate technology into their curricula with confidence and have secure Web-based collaborative space for use locally or shared throughout the world. In addition, teachers and students will have the opportunity to enter the work they produce into the ThinkQuest International Competition 2011, which challenges students to solve real-world problems by creating Web-based projects, digital media, or Web-based applications.

Professor Garfield Foundation

A partnership with the Professor Garfield Foundation *(www.professorgarfield.org)* brings to schools the sophisticated learning tools and content bundled in the charm and whimsy of Garfield the Cat. These resources include support materials for reading, math, cyber-safety and anti-bullying, cartoon and graphic novel creation. Resources for students with varying learning needs and styles are also provided. The centers recently ran a contest with the foundation for grades 3-5 centered on building a comic panel on saving the environment and have just launched a contest for grades K-2 on bullying prevention *(http://toon-books.com/bully_flyer.php)*.

Faulkes Telescope

A partnership with Faulkes Telescope brings the use of the Stellarium from England to teachers and students via computer through the use of real-time audiovisual interactive online work with Elluminate LIVE. Telescopes located in Australia and Hawaii are controlled through an Internet interface on the Faulkes site *(http://www. faulkestelescope.com/aboutus)*. Teachers can schedule where and when they want their students to scan in the skies, then interpret the

collected images using various filters and data collection. The culminating activity is a collaborative project with teachers in the United States and United Kingdom.

VITAL (Video in Teaching and Learning)

Through VITAL, Video in Teaching and Learning for NYS educators, a property of WNET.ORG *(http://www.thirteen.org/edonline/edvideo/index.html)*, we have expanded our learning communities offering training in the use of its free, online library of public television content multimedia resources for pre-K-12. This partnership allows us to bring professional development using thousands of classroom-ready, standards-based resources and content to New York's teachers for use with their students. Additionally, each year, Technology Committee members present an array of workshops at the Celebration of Teaching & Learning Conference in New York City, sponsored by WNET.ORG to share the best in technology enriched educational practice *(http://thirteencelebration.org/)*.

Google Apps for Education

As districts face tighter budgets, teacher centers have partnered with Google to provide access and training on Google Apps for Education. Teacher centers and their associated BOCES will provide training to districts on how to implement Google in their environment and training to teachers on how to maximize learning, utilizing these free tools. Google Apps not only has the core tool sets used by schools, they are natively built to encourage collaboration and interaction between teachers and students in schools and across districts. This set of capabilities encourages the development of every student's 21st-century skills while mastering the core learning standards. Through this agreement, 697 public school districts and all non-public and charter schools will have access to Google Apps, ultimately reaching more than 3.1 million students throughout New York state. Each district has the opportunity to choose its own resources, and there is no cost for school districts to implement Google Apps in their classrooms. NYIT will develop the system of training certified trainers.

Compiled by Stan Silverman (Policy Board Chair, InterCounty Teacher Center; Director of Technology-Based Learning at NYIT), Maryann Augusta (Director, InterCounty Teacher Center, New York Partners for Technology Innovation) and Joseph Pesavento (President, Marlboro Faculty Association; Director, Mid-Hudson Teacher Center).

NYSUT Principles for Taking the Lead in Defining Excellence in P–12 Education

Preamble:

Public education is the cornerstone upon which the growth and dissemination of new knowledge for the public good and American democracy are built. Public education is critical to an informed public, a vital economy, and an engaged society. NYSUT is committed to the development and delivery of a just and equitable quality education for every member of the diverse student population of the state of New York. Many individuals, communities and institutions — including NYSUT and its membership — have taken on significant roles in achieving the goal of successful schooling. Seven principles affirming NYSUT's policies form the basis for NYSUT's decisions, positions, and activities:

1. Only quality teachers should teach New York's learners. Quality teachers must be well prepared, supported with adequate resources, justly compensated, and fairly evaluated.

New York's teaching corps encompasses some of the finest, best educated and most diverse, caring and professional teachers working in the nation today. The high quality exemplified by our teachers represents the consequence of excellent teacher preparation, a rigorous certification process, active and supportive school leadership, fair compensation, and a variety of growth opportunities.

Teacher education in collegiate programs continues to be the foundational step in teacher development. Professional growth for all teachers should be extended and improved through induction, mentoring and professional development.

New York's commitment to hold teachers to fair teaching standards is undergirded by the comprehensive evaluation of teachers based on multiple measures of their performance and designed to promote teacher growth.

Teachers themselves are in the best position to continue the ongoing development of standards that reflect their real-world experience in a variety of settings and conditions.

2. Comprehensive instruction, programs and services must be provided in a safe, healthy and orderly learning environment to ensure that the "whole child" is educated.

New York's learners must be prepared for successful futures. They are unique, diverse, complex and creative social beings. They deserve a quality education that includes experiences with diverse cultures, the creative arts, technology, and career and technical skills. Mastery of core academic subjects is essential for all learners.

Safe, healthy and orderly learning environments are critical elements in the prescription for success for students, teachers and school-related professionals (SRPs) and students. Schools work best when they are appropriately staffed and instructional experiences are supported by a variety of services, such as health, nutrition, and mental health services provided

by appropriately licensed/certified personnel and other school-related professionals. Quality SRPs must be well prepared, supported with adequate resources, justly compensated, and fairly evaluated.

3. **Quality school administration is characterized by appropriate and relevant preparation, professional collaboration and genuine accountability.**

Skillful school administrators of the 21st century must recognize the critical role of culture, diversity and collaboration in order to succeed. School leaders must understand and be prepared to meet the needs of a diverse student population.

Administrators in our schools should possess not only vision and credibility, but also substantial and meaningful classroom experience, pedagogical know-how, and a commitment to community participation.

School administrators must meet state performance standards, demonstrate expertise and knowledge, and participate in ongoing, relevant professional development.

Working collaboratively with teachers, school administrators can expand the responsibility for and investment of the whole community in school change, diversity, and students' academic achievement.

4. **The participation of practitioners as equal partners ensures the development of quality educational goals. Quality educational decisions may only be reached through established and respected agreements between labor and management.**

When decision-makers plan and implement a public education agenda, no one speaks with more authority on matters of schooling than teachers and school-related professionals. Educators' long history of advocacy in our schools, community-building, and relationships with boards and policymakers demonstrates an ongoing commitment to collaboration and school improvement.

Contractual relationships and collective bargaining establish stable and predictable mechanisms for effectively building mutual trust and communicating quality standards and solutions to educational challenges. These mechanisms empower representative teachers to ensure that teachers' views are heard and respected and that their working conditions are continuously improved.

Practitioners' participation ensures that their challenges, successes and experience in New York's classrooms will provide the most authoritative insider's perspective on what works and what changes can have the most impact on improving instruction.

NYSUT Principles for Taking the Lead in Defining Excellence in P–12 Education (cont'd)

5. Quality teaching and learning encompasses clear academic standards, well-developed curricula, skillful instruction, and fair and aligned assessments. Strategies to improve teaching and learning must be informed by student needs, professional judgment, and multiple sources of thoroughly analyzed data while affording teachers their professional autonomy.

Teachers know what has to be taught and how best to assess student learning.

The hallmarks of quality instruction are embodied in standards, curricula and reliable, fair assessments that have been formulated from the shared experiences of teachers and learners.

The content of instruction must be logically sequenced, reasonable in scope, and seamlessly integrated in a progression of knowledge, skills and abilities that lead to mastery, while affording practitioners the flexibility to foster critical thinking, creativity, and "teachable moments."

Data offer us many insights into how learners are progressing in school. Many types of data derived from multiple measures must be examined to provide an accurate and complete picture of student learning.

Teachers and school leaders need professional development, supports and expertise in order to effectively use data to make meaningful decisions and appropriate instructional changes.

6. Every member of the education community must share responsibility equally and be accountable for the quality of teaching and learning in our schools.

Shared accountability, decision-making, and responsibility will drive open communication, problem-solving and thoughtful planning.

Students must be accountable for their school performance, teachers for their instructional decisions, parents for their school involvement, and administrators, school board members, Regents, and legislators for their policies, processes, and resource decisions that support teaching and learning.

Professional development should be made available to all members of the education community to help them understand their responsibilities.

7. The local, state and federal governments must provide policies, programs, and funding to ensure that every student has access to a high-quality education.

Acting with foresight, transparency and responsibility, our state and local districts must work diligently to guarantee that all students — and especially those who have traditionally been disenfranchised, such as those with disabilities, English language learners (ELL), or those living in poverty — receive an adequately funded and comprehensive range of services and programs. In that effort, the resources of the federal government should level the playing field for states to serve disenfranchised students.

Defining
EXCELLENCE

NYSUT Principles for Taking the Lead in Defining Excellence in Higher Education

Preamble:

NYSUT believes that higher education serves the public good by fostering learning, creativity and engagement. Higher education supports the values necessary for the development of democracy. It is essential for the social, cultural, and economic development of all people. Higher education institutions' ability to deliver quality education is, however, severely threatened by three troubling trends:

1) Public higher education institutions face a funding crisis brought on by the withdrawal of public funds by state and local governments

2) Colleges and universities have been forced to become over-reliant on contingent and part-time instructional staff and

3) Colleges' and universities' administrations have become increasingly corporatized, undermining shared governance.

To ensure that this public good is maintained and protected, NYSUT believes that its membership, the general public, and the government must be consistently invested in supporting higher education institutions and proactive in providing the necessary funding to provide a quality education. NYSUT recognizes that higher education is a public good and supports the faculty and professional staff who teach and guide our diverse student body. NYSUT's activities to support higher education are guided by and comport with seven guiding principles:

1. In the 21st century, higher education is essential for individual and societal well-being. A high school education is no longer adequate to prepare individuals for the challenges they face.

2. Access to higher education must be guaranteed to all students. It must be vigorously pursued, protected and equitably distributed.

The imperative of social justice and the changing and dynamic character of the national economy demand that we meet the challenges of growth and sustainability with a diverse and empowered workforce.

Educational opportunity is the gateway to individual and community success and prosperity. All students, regardless of ability, language of origin, socio-economic status, or other distinguishing characteristics must be afforded the opportunity to participate in higher education.

3. Public funding to support higher education across the disciplines and professions is essential. The erosion of public dollars must be halted.

The stable, broad-based development of a highly educated workforce will assure the role of New York's learners in the global economy in the 21st century. Federal and state fiscal resources must be mobilized to fortify and sustain this development.

The workforce will retain its depth and sustainability from an education that prepares learners to think and act technically, politically, socially and ethically.

The critical thinking that underlies innovation demands a population of workers broadly engaged in science, technology, engineering, mathematics and in the arts and sciences.

The cost of a quality education has outstripped the resources of most students; costs must be shared by the entire society, the ultimate beneficiary of high quality workforce development.

Resources

NYSUT Principles for Taking the Lead in Defining Excellence in Higher Education (cont'd)

4. The focus of higher education must be on meeting the needs of a dynamic and changing student body. Quality higher education goes beyond attaining a degree.

A quality education for the community of dynamic and diverse 21st century college students requires a complex array of academics, services, and social supports.

Students exist at the center of the higher education enterprise; their success is evidence of a community of educators who understand their complex needs and rise to meet the challenges these needs present.

In addition to strong instructional programs, students find academic support through services focused on skill remediation, alternative assessments, tutoring, accommodations, study skills, laboratory practice, technology support, career and academic counseling, and research and library skills.

Students thrive in environments in which they feel competent, safe, supported, and connected to community.

5. Quality higher education requires investment in a permanent full-time faculty and staff. Part-time faculty and graduate employees make essential contributions to higher education, but colleges and universities must cease relying on a corps of underpaid faculty with little or no job security for their core mission of instruction.

To meet the needs of a changing learner population, institutions of higher education must engage a corps of teaching and research professionals working in full-time, part-time and adjunct capacities. These roles and responsibilities must be strengthened, protected, and enforced by tenure systems, collective bargaining and contracts. The practices of shared governance — in which faculty play key roles in decision-making and planning — are critical to maintaining institutional integrity and growth.

Full-time faculty (minimally, 70% of the workforce) provide the stability essential to building a quality learning community and experience for students. Peer review ensures that the highest standards guide the activities of scholarship. Faculty and professional staff participation in the development of instructional accountability systems ensures that curricular decisions and policies are shaped and implemented by those best qualified to do so.

6. Higher education's fundamental work of teaching and research requires that faculty and professional staff engaged in these activities be protected by academic freedom. Shared governance, peer review and collective bargaining for all academic workers protect bedrock rights and enhance the quality of education for students. Faculty rights to academic freedom, peer review, collective bargaining and shared governance cannot be compromised; professional employees must be offered the necessary sphere of autonomous decision-making within which they can exercise their best professional judgment.

The freedom for students, faculty and professionals to engage in inquiry, discussion, publication, and scholarship is a critical element of the intellectual diversity essential in higher education. The pursuit of new knowledge must be underpinned by the right to question received knowledge, to advance unpopular opinions, and to suggest ideas without fear of repression. Faculty rights to academic freedom and professional autonomy must be strongly supported and vigilantly guarded.

7. The role of higher education in research and development must be supported with appropriate funding, resources and faculty.

Leveraging the scholarship of faculty and students engaged in research and development activities is a critical activity in higher education. The creative activities, basic and applied research, and scholarship developed in higher education settings stimulate the economy, attract investment and jobs, and drive innovation toward products and services that serve the public good.

Defining
EXCELLENCE

Additional Resources

The **ISTE NETS** and **Performance Indicators for Teachers (NETS•T)**

Effective teachers model and apply the National Educational Technology Standards for Students (NETS•S) as they design, implement, and assess learning experiences to engage students and improve learning; enrich professional practice; and provide positive models for students, colleagues, and the community. All teachers should meet the following standards and performance indicators. Teachers:

1. Facilitate and Inspire Student Learning and Creativity

Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments. Teachers:

- **a.** promote, support, and model creative and innovative thinking and inventiveness
- **b.** engage students in exploring real-world issues and solving authentic problems using digital tools and resources
- **c.** promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes
- **d.** model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments

2. Design and Develop Digital-Age Learning Experiences and Assessments

Teachers design, develop, and evaluate authentic learning experiences and assessments incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the NETS•S. Teachers:

- **a.** design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity
- **b.** develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress
- **c.** customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources
- **d.** provide students with multiple and varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching

3. Model Digital-Age Work and Learning

Teachers exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society. Teachers:

- **a.** demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations
- **b.** collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation
- **c.** communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats
- **d.** model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning

### 4. Promote and Model Digital Citizenship and Responsibility

Teachers understand local and global societal issues and responsibilities in an evolving digital culture and exhibit legal and ethical behavior in their professional practices. Teachers:

- **a.** advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources
- **b.** address the diverse needs of all learners by using learner-centered strategies and providing equitable access to appropriate digital tools and resources
- **c.** promote and model digital etiquette and responsible social interactions related to the use of technology and information
- **d.** develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital-age communication and collaboration tools

5. Engage in Professional Growth and Leadership

Teachers continuously improve their professional practice, model lifelong learning, and exhibit leadership in their school and professional community by promoting and demonstrating the effective use of digital tools and resources. Teachers:

- **a.** participate in local and global learning communities to explore creative applications of technology to improve student learning
- **b.** exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others
- **c.** evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning
- **d.** contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community
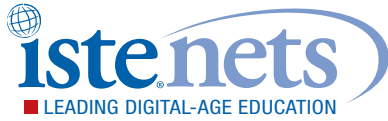
The **ISTE NETS** and **Performance Indicators for Students (NETS•S)**

1. Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

- **a.** apply existing knowledge to generate new ideas, products, or processes
- **b.** create original works as a means of personal or group expression
- **c.** use models and simulations to explore complex systems and issues
- **d.** identify trends and forecast possibilities

2. Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

- **a.** interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
- **b.** communicate information and ideas effectively to multiple audiences using a variety of media and formats
- **c.** develop cultural understanding and global awareness by engaging with learners of other cultures
- **d.** contribute to project teams to produce original works or solve problems

3. Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information. Students:

- **a.** plan strategies to guide inquiry
- **b.** locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
- **c.** evaluate and select information sources and digital tools based on the appropriateness to specific tasks
- **d.** process data and report results

4. Critical Thinking, Problem Solving, and Decision Making

Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students:

- **a.** identify and define authentic problems and significant questions for investigation
- **b.** plan and manage activities to develop a solution or complete a project
- **c.** collect and analyze data to identify solutions and/or make informed decisions
- **d.** use multiple processes and diverse perspectives to explore alternative solutions

5. Digital Citizenship

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

- **a.** advocate and practice safe, legal, and responsible use of information and technology
- **b.** exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
- **c.** demonstrate personal responsibility for lifelong learning
- **d.** exhibit leadership for digital citizenship

6. Technology Operations and Concepts

Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:

- **a.** understand and use technology systems
- **b.** select and use applications effectively and productively
- **c.** troubleshoot systems and applications
- **d.** transfer current knowledge to learning of new technologies

Assessment
Multiple Ways of Assessing Student Learning

EDITORIAL GUIDELINES

Educator's Voice is NYSUT's Journal of Best Practices in Education — a series dedicated to highlighting research-based classroom and school/district-wide strategies that make a difference in student achievement. The theme for our next volume, published in spring 2012, is Assessment. Teachers use a variety of ways of assessing what students have learned. In this volume, NYSUT seeks descriptions of effective assessment practices that are used to inform instruction. Authors must be active or retired members of NYSUT or an affiliate (e.g., United University Professions, Professional Staff Congress). If there are multiple authors, at least one author must be a current or retired NYSUT member. The Editorial Board encourages articles by individual authors, teams of teachers, and higher education faculty working with teachers in P-12 schools.

Audience: Classroom teachers, school-related professionals, union leaders, parents, administrators, higher education faculty, researchers, legislators and policymakers.

Deadline for proposals: June 10, 2011.

Article length: Approximately 2,000 words (or 7-8 double-spaced pages plus References).

Writing style: Authors are encouraged to write in a direct style designed to be helpful to both practitioners and to others committed to strengthening education.
Education terms (i.e., jargon) should be defined for a broad audience.

Manuscript: American Psychological Association (APA) style with references at end of article. (Graphics/photographs may be submitted—with permissions as necessary. Please do not submit copyrighted material unless you obtain permission from the publisher.)

Rights: Acceptance of a proposal is not a guarantee of publication. Publication decisions are made by the Editorial Board. NYSUT retains the right to edit articles. The author will have the right to review changes and if not acceptable to both parties, the article will not be included in the *Educator's Voice*. NYSUT may also retain the article for possible use on the NYSUT website (*www.nysut.org*) or for future publication in *NYSUT United*.

Educator's Voice – Volume V

Content Guidelines

Authors are asked to describe:

- The context for the reader (area of curriculum, grade, class composition).

- What learning outcomes you were targeting for assessment (unit outcomes, course outcomes, ongoing curriculum-based assessments), and an overview of the teaching practices you used to address the desired outcomes. State the NYS Learning Standards with which your outcomes/objectives were aligned.

- The assessment(s) you chose or developed (description of its components, example items/tasks if appropriate, directions to students, rubrics, scoring guides). Measures you describe can be locally developed or commercially produced. Examples of locally developed measures that can be used to assess student learning include, but are not limited to:

  - Portfolios of student work with rubrics that are developed for that content and grade level

  - Pre- and Post-tests based on curriculum goals (curriculum-based assessments)

  - Performance tasks with rubrics

  - Projects, logs, journals with scoring criteria

  - An assessment with multiple components, such as a science assessment that has a performance component such as a lab — as well as a selected response component. (A measure of student learning does not need to be limited to a traditional single format — such as multiple choice only.)

- Why you chose or developed this assessment(s), whether it is used by others in your school/district, and a statement of how research on assessment informs your decision.

- How you accommodated students with disabilities, students who are English language learners, or other students with unique learning needs.

- Why you view this assessment(s) as meeting the criteria of high quality assessment practice, and what limitations (if any) you identify for modifying for the future.

- How you used the information to inform and modify your instruction (please be very specific).

- Your system for collecting assessment results, and how you communicated results to others.

Assessment
Multiple Ways of Assessing Student Learning

AUTHOR SUBMISSION FORM — VOL. V

Name of Author(s) _____

If multiple authors, please list all names, and identify one author as primary contact person_____
_____

Article working title_____
_____

Please check all the categories of affiliation with NYSUT that apply to the primary author/contact person:

❑ 1. I am an active teacher member of the following local _____

❑ 2. I am an active SRP member of the following local_____

❑ 3. I am an active higher education member of UUP or PSC at the following campus _____

❑ 4. I am an instructor of the following NYSUT Education & Learning Trust course_____
_____

❑ 5. I am a member of the following NYSUT Subject Area Committee _____
_____

❑ 6. I am a retired teacher and member of the following retiree council _____

Please provide a statement/outline describing how you plan to address each specific "Content Guideline" and any additional information that you intend to incorporate in your manuscript. Also, please provide:

Current position of author(s), including district, grade(s) and content area:_____
_____

Primary author's name, address, day and evening phone numbers: _____
_____

Primary author's e-mail address: _____
Summer contact information, if different:_____
_____

Information can be submitted electronically by June 10, 2011, to:

Ldavern@nysutmail.org

Or mail to:

NYSUT Research & Educational Services
Attn: Linda Davern
800 Troy-Schenectady Road
Latham, NY 12110

Deadlines for Volume V:	
June 10, 2011	Proposal submission deadline
June 30, 2011	NYSUT responds to proposal
Aug. 31, 2011	Completed article submission
April 2012	Publication

NYSUT Education & Learning Trust

The Education & Learning Trust is NYSUT's primary way of delivering professional development to its members. ELT offers courses for undergraduate, graduate and in-service credit, partnership programs that lead to master's degrees and teaching certificates, and workshops and professional development programs for teachers, school-related professionals, and members from the health care community.

Examples of graduate courses offered by ELT include:

Collaborative Inquiry for Students: Preparing Minds for the Future

Cooperative Learning: Students with Special Needs

Cyber Bullying: The New Age of Harassment

Designing Motivation for All Learners

Inclusion: Education for All K-12

Methods and Materials for Students with Disabilities

Middle Level Education

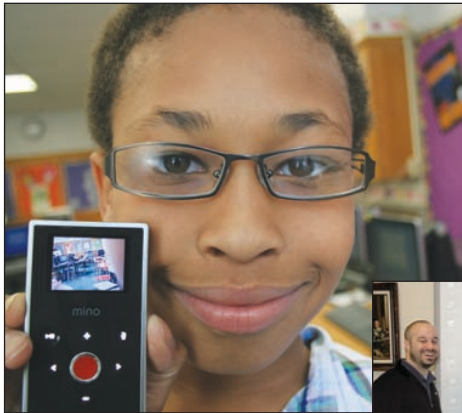Successful Teaching for the Acceptance of Responsibility

Using RTI for School Improvement

For information on ELT, go to *www.nysut.org/elt*; e-mail *ELTmail@nysutmail.org*; or call 800-528-6208 or 518-213-6000 in the Capital District.

ELT

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