Technical Assistance Sampler

Examples of Using Interactive Technology to Assist in Addressing Barriers to Learning

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Preface

Current reports indicate that at least 95 percent of schools in the U.S.A. have Internet access. School districts are developing web pages and are using a variety of technology and programs that enable students, families, school personnel, and other stakeholders to interact from anywhere and at anytime.

In recent years, advances in technology have influenced every aspect of schools and student lives. Most of these advances have provided opportunities that hold great promise for strengthening positive outcomes for all students. Hardware and software permit teachers to establish a variety of paths to learning ranging from tutorials to enriching introductions to unlimited topics, from fundamental math to musical composition, from motivated practice to creative production, from independent to cooperative learning. And if a student doesn't succeed initially, technology enhances opportunities for subsequent success.

As David D. Carbonara, director of the Program in Instructional Technology at Duquesne University stresses that technology gives students the capability to think deeper and to explore more topics. And "the beauty of it is, it's always there for the students."

Because of the rapid advances in the use of technology in schools, we are adding links to more resources in our online clearinghouse – see the Quick Finds entitled *Technology as an Intervention Tool* and *MH Related Software and Media* . As new information becomes available, we also endeavor to update the resources we have developed. Our first effort along these lines was the Center's technical assistance sampler entitled *Using Technology to Address Barriers to Learning* http://smhp.psych.ucla.edu/pdfdocs/sampler/technology/techno.pdf . This technical assistance sampler builds on that effort. As with the Quick Finds, the Center's Technical Assistance Samplers are meant as another aid for linking into the network of resources around the world.

Because a major portion of this sampler is organized to parallel our frameworks for a unified and comprehensive system of learning supports and the system changes that are needed to transform schools to meet the needs of all students, we begin with a reminder about what such an approach entails.* We also offer a few caveats and cautions, highlight the federal initiative to advance use of technology in schools, present a few examples from across the country, and emphasize the degree to which students are already connected. Then, we underscore technology related to enhancing classroom supports, transitions, home involvement, crisis prevention and response, community involvement, and student family assistance. In addition, we include examples of how technology is impacting special education, professional development, and system change.

Given how fast technology is changing the world, we hope you will share with us how local schools are using such tools so we can share the information with others working to improve the lives of children and our society. Send to Ltaylor@ucla.edu.

*For a bit more about a unified and comprehensive system of learning supports, see *Toward Next Steps in School Improvement: Addressing Barriers to Learning and Teaching* http://smhp.psych.ucla.edu/pdfdocs/systemic/towardnextstep.pdf.

Introduction:
Addressing Barriers Calls for a Unified and Comprehensive Approach

Our framework for a unified and comprehensive system to address barriers to learning and teaching emphasizes full integration of instruction and learning supports. Learning supports are the resources, strategies, and practices that provide the physical, social, emotional, and intellectual supports that directly address barriers to learning and teaching, and that re-engage disconnected students.

To be most effective, learning supports are unified and then developed into a comprehensive system that provides supportive interventions in classrooms and school-wide and is fully integrated with efforts to improve instruction and management at a school.

The learning supports intervention framework combines both an integrated and systemic continuum of school and community interventions and a multifaceted and cohesive set of six content areas. The continuum is designed to

- promote positive development and prevent problems
- intervene as early after the onset of problems as is feasible
- provide special assistance for severe and chronic problems.

The continuum is embedded into the following six content areas:

- Classroom-based approaches to enable learning (e.g., ensuring classrooms have necessary supports and create and maintain a positive climate)
- Support for transitions (e.g., assisting students and families as they negotiate hurdles to enrollment, adjust to school, grade, and program changes, make daily transitions before, during, and after school, access and effectively use supports and extended learning opportunities, and so forth)
- Home involvement and engagement in schooling (e.g., increasing and strengthening the home and its connections with school)
- Community engagement with schools (e.g., outreach to develop a greater community support from a wide range of entities. This includes agency collaborations and use of volunteers to extend learning opportunities and help students-in-need.)
- Crises assistance and prevention (including ensuring immediate assistance in emergencies, providing follow-up care as necessary, developing prevention programs, creating a caring and safe learning environment and countering the impact of out-of-school traumatic events)
- Student and family assistance (facilitating student and family access to effective services and special assistance on campus and in the community as needed).

Combining the continuum with the six areas provides the following framework.

Framework for a Comprehensive System of Learning Supports

Levels of Intervention

	Systems for Promoting Healthy Development & Preventing Problems	Systems for Early Intervention (Early after problem onset)	Systems of Care
Classroom-Focused Enabling			
Crisis/ Emergency Assistance & Prevention			
Support for transitions			
Home Involvement in Schooling			
Community Outreach/ Volunteers			
Student and Family Assistance			

Intervention Content Arenas (row label for the left side)

Accommodations for differences & disabilities

Specialized assistance & other intensified interventions (e.g., Special Education & School-Based Behavioral Health)

An essential facet in improving how a school addresses barriers to learning involves analyzing the strengths, weaknesses, and gaps of all existing programs and resources (including technology) and then developing a unified and comprehensive system of learning supports. The above matrix provides a framework for this work. As an aid in starting, see *Mapping and Analyzing Resources –*
http://smhp.psych.ucla.edu/summit2002/tool%20mapping%20current%20status.pdf

Note: Some districts have turned this into an online activity to elicit input from a wide range of school staff and to provide a online directory of school and district resources.

While the rest of this sampler focuses on specific examples of technology related to enabling learning, as the following example emphasizes, it is the full integration of a range of technological supports that enhances the impact in addressing barriers to learning.

"Gainesville City Schools in Georgia has dramatically improved student achievement by overhauling its approach to education based on a framework called a Unified and Comprehensive System of Learning Supports...To achieve better results the district focused on three main goals: access, engagement, and prevention. Access helps ensure that all students have equal opportunities to learn and addresses any barriers to learning. Personalization helps encourage student engagement by customizing learning materials so they are relevant to each student. And prevention helps identify areas where students are struggling before they fail. ...

Blended learning, which combines online learning with traditional classroom instruction, is a key component of the district's unified and comprehensive system of learning supports. Before implementing the new system, the district was using blended learning strictly as a credit recovery tool for students. Students received traditional classroom instruction, and if they didn't pass the course, the schools rolled out the blended learning tool. However, many students in the district's high-poverty schools have responsibilities outside of school that make it difficult for them to attend class. Some are working to support their families or have children of their own.

After re-evaluating its approach, the district implemented blended learning using Edgenuity and Georgia Virtual School as the primary mode of instruction for some students and created a special school with non-traditional hours for those students who thought they would benefit from it. Students in the "twilight school" can access learning materials online when they're not in the classroom and attend class in the evenings for face-to-face support from their teachers. Following the success of the program at the high school level, the district has extended it to the middle school level.

Gainesville also identified barriers to learning in the transition from grade 5 to 6, when students went from having the same teacher all day with a single classroom as a home base to moving from class to class with a locker as a home base. Many students were struggling in the new environment and finding it challenging to submit homework to multiple teachers. The students at the school all had iPads, so some of the teachers implemented Dropbox. The teachers distributed all of their learning materials digitally through Dropbox, and the students submitted their assignments the same way, so they didn't need to go to their lockers for books or homework. "Everything was happening in this digital locker in the classroom," said Moore. "So it eliminated that barrier for students."

Another issue for some students was Internet access outside of school. At one of the district's elementary schools, very few of the students have access to the Internet at

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home, so mobile devices that need to be online are of little help to the students outside of school. The district is piloting a tablet called a KUNO for students in grades 2 through 5. When the students are at school, the KUNO syncs with the school and loads the tablet with all of the materials the student will need for the day and that evening at home, so they don't need the Internet at home to access their learning materials and do their homework.

The third area of focus for the district's unified and comprehensive system of learning supports was prevention. In the past, the district relied on specialized diagnostic tools, such as easyCBM,triand, and DataDirector. The district still uses those tools but now places greater emphasis on everyday educational tools for the classroom that have built-in diagnostics and can monitor the student's work to identify areas of weakness and adjust the learning materials accordingly to meet the individual student's needs.

Other educational technologies the district is using to remove barriers to teaching and learning include Educreations, which lets teachers record everything they do in the classroom, including their voice and whiteboard, so students can catch up on missed classes or review material. The district also uses the PowerSchool student information system to send text messages, phone messages, and e-mails to parents and community members. The district is starting to create its own textbooks using CK-12, and it encourages a bring-your-own device policy for students.

To support these technology initiatives, Gainesville has a technician at every school, as well as an instructional technology specialist, a regular teacher who receives an additional stipend to work outside of regular hours to provide other teachers with one-on-one support for using the educational technology tools."

(Note: for hot links to all of the programs mentioned above, see the original online article.)

I. About Interactive Technology and Schools: *Caveats and Cautions*

We are optimistic about the role of technology as a tool in guiding strategies to help monitor how we integrate technology into the work of schools. However, concerns about privacy, cyberbullying, hacking into grade books, etc., make it clear that we need to be careful in using technology.

Other have made substantive statements related to the limits and possible negative impact. Here is one example:

Excerpt From: *Children and Electronic Media, The Future of Children*.
http://www.futureofchildren.org/ by: J. Brooks-Gunn & E. H. Donahue

"Media technology is an integral part of children's lives in the twenty-first century. The world of electronic media, however, is changing dramatically. Television, which dominated the media world through the mid-1990s, now competes in an arena crowded with cell phones, iPods, video games, instant messaging, interactive multi-player video games, virtual reality sites, Web social networks, and e-mail.

American children are exposed to all these media and more. The vast majority of children have access to multiple media. Virtually all have television and radio in their homes, and half have a television in their bedrooms. Most have Internet and video game access, and a significant portion has a cell phone and an iPod. The numbers joining social networking websites like Facebook and MySpace grow daily. Technological convergence, a hallmark of media use today, enables youth to access the same source from different, often portable, media platforms. Thanks to convergence, a teen can watch a television show on a computer long after the show has aired on television and can use a cell phone to surf the Internet. Children, particularly adolescents, thus have almost constant access to media-often at times and in places where adult supervision is absent. As a result, America's young people spend more time using media than they do engaging in any single activity other than sleeping.

What do researchers know about how children and youth use electronic media and about how that use influences their lives? Is media technology a boon, one that leaves American children today better educated, more socially connected, and better informed than any previous generation of the nation's children? Or is it, as many voices warn, a hazard for vulnerable children-an endless source of advertising, portrayals of violence, and opportunities for dangerous encounters with strangers and possible exposure to pornography?

The quantity and quality of research on these questions are uneven. Researchers have amassed a vast amount of solid information on older technologies, such as television and movies. But investigations of newer technologies and of the novel uses of existing technologies are far fewer in number and more speculative in their findings. The pervasiveness of electronic media in the lives of children makes it important for policymakers, educators, parents, and advocates to know what researchers have discovered, as well as what questions remain unanswered."

II. Federal Initiative to Advance Use of Technology in Schools

The U. S. Department of Education has developed a major initiative for advancing technology for student learning. Here is information from their website – http://www.ed.gov/edblogs/technology/

"The Office of Educational Technology (OET), in the Office of the Secretary, provides leadership for transforming education through the power of technology. OET develops national educational technology policy and advocates for the transition from print-based to digital learning. OET supports the President's and Secretary's ConnectED Initiative by:

- Promoting equity of access by ensuring a device for every learner and connecting all schools to broadband internet.
- Supporting powered-up educators and a robust ecosystem of entrepreneurs and innovators.
- Leading cutting-edge research in learning analytics and data to provide new types of evidence and customize and improve learning.

Re: ConnectED – http://www.ed.gov/edblogs/technology/connected/
"The ConnectED Initiative announced by the President on June 6, 2013 sets four clear goals to transition to digital learning across the country in 5 years:

Upgraded Connectivity: Ensure next-generation broadband and high-speed wireless to is available to virtually all of America''s students in their classrooms and libraries.

Access to Learning Devices: Ensure students and teachers have access to affordable mobile devices to access digital learning resources at any time inside and outside of the classroom

Supported Teachers: ConnectED invests in improving the skills of teachers, ensuring that every educator in America receives support and training to use technology to help improve student outcomes.

Digital Learning Resources Ensure availability of high-quality digital learning resources and materials for students and teachers."

The website provides a link to the National Education Technology Plan – http://www.ed.gov/edblogs/technology/netp-2010/
Excerpt: "...The plan recognizes that technology is at the core of virtually every aspect of our daily lives and work, and we must leverage it to provide engaging and powerful learning experiences and content, as well as resources and assessments that measure student achievement in more complete, authentic, and meaningful ways. Technology-based learneing and assessment systems will be pivotal in improving student learning and generating data that can be used to continuously improve the education system at all levels. Technology will help us execute collaborative teaching strategies combined with professional learning that better prepare and enhance educators' competencies and expertise over the course of their careers. ...The model of learning described in this plan calls for engaging

and empowering learning experiences for all learners. The model asks that we focus what and how we teach to match what people need to know, how they learn, where and when they will learn, and who needs to learn. It brings state-of-the art technology into learning to enable, motivate, and inspire all students, regardless of background, languages, or disabilities, to achieve. It leverages the power of technology to provide personalized learning and to enable continuous and lifelong learning...."

The site also includes links to each state's technology plan for education –
http://www2.ed.gov/programs/edtech/techstateplan.html

Excerpt from: *Personalized progress: How tech model is driving achievement*
http://www.districtadministration.com/article/personalized-progress-how-tech-model-driving-achievement

"...District administrators have a financial incentive to adopt personalized learning. When the U.S. Department of Education in 2012 changed its Race to the Top grant selection criteria to favor districts with personalized learning, it provided a multimillion dollar carrot to educators....

Many district administrators are designing curricula based on the personalized learning principle that all students should receive an education that matches their specific learning needs. Technological advances have made this concept feasible, since adaptive learning software has the capacity to do what was once impossible. The software engages students with game-like programs and constantly monitors their performance. It also uses artificial intelligence to pinpoint students'' weaknesses and identify which lessons they need to learn next. Teachers report this method allows them to spend more time mentoring students, and one-on-one interaction critical to the success of personalized learning. During class time, teachers can focus on project-based learning, allowing students to pursue their interests through customized writing assignments designed to intrigue them and to reinforce literacy skills. This allows teachers to engage students that were formerly hard to reach...."

Resources (see original article for hot links to the following)

Adaptive Learning Technology Companies
Achieve 3000, ALEKS Corporation, DreamBox Learning, eSpark, iReady, It's Learning, Khan Academy, Lexia Reading, myOn Reader, Time to Know
Nonprofits: Student-Centered Education
Big Picture Learning, LEAD Commission, New Classrooms, Powerful Learning Practice Network, Project Tomorrow, The Re-Inventing Schools Coalition
Learning/Data Management System Providers
Echalk, Schoolzilla

III. A Few Examples from Across the Country

Apps before naps: Nashville pre-K classrooms use tablets to help kids learn

"With pre-K programs under the microscope, classrooms use innovative approaches - and technology - to challenge young minds. Vanderbilt researchers find promise in the tablet's ability to teach a whole gamut of skills at once, from obvious ones, such as reading and writing, to some that aren't as traditional - but are nonetheless valuable. These include comfort with digital technology and taking pride in being bilingual. ... Part of the research looks straight at the proliferation of touchscreens, smartphones and hand-held video games in daily life, acknowledging that failing to bring similar tools into the classroom could make schools 'obsolete.'

Pros and Cons Indicated About Tablets in the Classroom

Pros
Speed:	Children can draw or snap photographs and instantly write about those visuals.
Audio:	Bilingual students can record and play back their voices in English and native languages.
Touch:	Touchscreens can be physically easier for young children to use than computers with a mouse and keyboard.
Bravery:	Students must move out of comfort zones with technology.

Cons
Distraction:	Hunting and pecking across the keyboard can distract children from delivering their messages.
Pacing:	With so many app tools, teachers could push students to compose multimedia too soon.
Cost:	At the moment, students must share technologies such as touchscreen tablets."

Technology in the Classroom: A 2:1 Laptop Learning Initiative

"Stillwater Jr. High has a rich history of technology integration to assure that our students have the skills needed to be successful twenty-first century learners. We started with a large-scale integration effort in the fall of 2002. ... all teachers were provided with laptops, a building-wide wireless network, servers, extensive training, support, software, peripherals and curriculum writing time. In March of 2003, more than 400 new laptops and 100 desktop computers were rolled out on mobile carts for student use in the classroom.

Starting in September 2013 ... classes will be using multiple online tools and sources.... The centerpiece ... will be a moodle course ... accessible from outside of school using other devices like computers, tablets, smartphones, etc.

All classes at Stillwater Jr. High use cart-based, wireless laptops. Emphasis is placed on the creation and electronic publication of challenging, real-world projects. All students have storage locations on the school server and each is provided web publishing capabilities. A typical year-long class would use computers and related technologies for 8-12 weeks of the school year. Visitors from around the country and the world visit the school's website to view videos of the technology-rich lessons that students experience.

The school uses a comprehensive web-based program called Skyward to provide parents and students with instant access to student projects, grades, assignments, file transfer between home and school, communication links to teachers and other valuable features. Parents may also subscribe to weekly e-mail updates from the school as well as RSS subscriptions to news pages on this website."

Flipping the classroom

"Flipping the classroom" means that students gain first exposure to new material outside of class, usually via reading or lecture videos, and then use class time to do the harder work of assimilating that knowledge, perhaps through problem-solving, discussion, or debates....

By providing an opportunity for students to *use* their new factual knowledge while they have access to immediate feedback from peers and the instructor, the flipped classroom helps students learn to correct misconceptions and organize their new knowledge such that it is more accessible for future use. The immediate feedback that occurs in the flipped classroom also helps students recognize and think about their own growing understanding

What are the key elements of the flipped classroom?
- Provide an opportunity for students to gain first exposure prior to class. The mechanism used for first exposure can vary, from simple textbook readings to lecture videos to podcasts or screencasts....
- Provide an incentive for students to prepare for class. Students complete a task associated with their preparation….
- Provide a mechanism to assess student understanding. The pre-class assignments that students complete as evidence of their preparation can also help both the instructor and the student assess understanding....
- Provide in-class activities that focus on higher level cognitive activities. If the students gained basic knowledge outside of class, then they need to spend class time to promote deeper learning"

For more, see: http://flippedclassroom.org/

State Helps Students with Personalized Learning Plans

The Vermont Agency of Education launched a website to help schools, students and parents prepare for personalized learning plans. Based on legislation passed last year, each student eventually will develop a personalized learning plan that matches their career interests and aspirations with their learning, which could include internships and college courses. Vermont schools will develop plans with seventh and ninth graders and other grades will follow. Schools and parents will help the students to develop them and have the chance to review and revise them each year.

PA. Schools using technology to allow teachers, students to easily interact in order to enable learning anytime, anyplace

Schools are developing Web pages and technology-based programs to allow students, parents and faculty to access information around-the-clock and connect outside of the classroom. Using tools that students can access anytime and repeatedly (e.g., moodle, Blackboard Engage) teachers post assignments, calendars and other resources, flip instruction, post lectures and tutorials.

IV. Students are Already Connected

While the adults in schools are leaders in introducing innovative technologies for academic learning, even the youngest students are coming to school technologically connected. This makes it relatively easy to use multiple ways for students to network with others at school and beyond. Of course, this also produces concerns (i.e. related to privacy, cyberbullying).

We have reviewed such matters in our Center resource, *Youth and Socially Interactive Technologies.* http://smhp.psych.ucla.edu/pdfdocs/youth/socint.pdf. Topics include:

- Use of Socially Interactive Technologies
- Some Data on Youth Use of Technology to Connect
- What's Good About Using Technology to Facilitate Social Networking?
- What are the Concerns?
- How Do Current Policies and Practices Address the Concerns?
- Implications of Socially Interactive Technologies for Schools

Our intent in this brief resource was to provide a snapshot of how youth are connecting through the latest technology, the major benefits and concerns currently being discussed, and some implications for schools.

Here is an excerpt:

"As youth culture assimilates communication technology, the rapid pace of change makes it difficult to grasp the nature and scope of what is happening, never mind appreciating all the positive and negative implications. There are suggestions that the changes are fundamentally transforming the concept of community. These and a host of other matters related to youth and social networking through new technologies are topics for ongoing exploration and discussion. ...

In part because use is growing exponentially, up-to-date and valid data are limited. At the same time, given business sector, government, and researcher interests in who uses the internet, a considerable amount of data are being gathered. Here are some 2009 data on use reported by researchers from the Pew Internet & American Life Project (Lenhart, 2010; Lenhart, Madden, & Hitlin, 2005; Lenhart, Purcell, Smith, & Zickuhr, 2010):

> 93% of teens 12-17 go online (as do 93% of young adults aged18-29)

> 73% of wired American teens used social network sites (55% of 12 & 13 year olds, 82% of 14-17)

> 91% of teens in the U.S. who used social network sites did so to connect with their friends

> 75% of teens own cell phones (as do 93% of young adults)

> 75% of teens used IM on a regular basis (girls more than boys) to maintain or build friendships

> high school age girls (13%) were more likely to use Twitter than boys (7%); young adults led in using Twitter (33% of 18-29 year old post or read daily)

> 48% of wired teens have bought things online

The Pew project also reports that a typical teen sends about 50 texts a day, the majority of messages are for friends. In addition, they make 1-5 cell phone calls per day to friends and parents. Researchers have emphasized a range of potential psychosocial benefits. Here is a sampling:

Livingstone (2009) emphasizes that "at the heart of the explosion in online communication is the desire to construct valued representation of onself which affirms and is affirmed by one's peers."

Survey data indicate that "48% of youth said that they use the Internet to improve their relationships with friends, and 32% said that they use the Internet to make new friends" (Bryant, Sanders-Jackson, & Smallwood, 2006).

Many schools and colleges are embracing social network sites and other internet and computer tools to enhance instruction, collaboration, and professional development (Davis, 2010; Ito, Horst, Bittanti, boyd, Herr-Stephenson, Lange, Pascow, & Robinson, 2008; Patchin and Hinduja, 2010; SafeTeens.com).

Educational institutions are using social network sites (along with Skype) to create chat-room forums and groups to discuss and clarify, provide a range of extra supports for learning, and facilitate communication with families (especially those for whom face-to-face meetings are difficult). Some schools are using smartphones to enable students to instant-message peers and teachers with questions related to homework and to clarify difficult material.

Social interactions through technology also can be an aid for students and families who are shy or overly anxious in social situations (Pierce, 2009). More generally, social site networks may be of use in enhancing relationships between teachers and students (Mazer, Murphy, Simonds, 2007).

With respect to psychosocial development, researchers have suggested that participation on social network sites influences such matters as identity formation and social skill development. A recent study suggests such participation may have positive effects with respect to how youth cope with emotional distress such as grieving following someone's death (Williams & Merten, 2009).

For older students preparing for the workplace, the sites offer opportunities to enhance technical skills and enable networking with professionals for internship and job opportunities. Moreover, a recent study suggests a relationship between use of Facebook and staying in school (Morris, Reese, Beck, & Mattis, 2010).

And school professionals are creating learning communities and communities of practice for sharing and continuing education (e.g., Ning for teachers, Learn Central, TeachStreet, and other sites include educational blogs, eportfolios, formal and ad hoc communities, chats, discussion threads, and synchronous forums). For teachers, social network sites are another avenue to open the classroom door and end the traditional isolation (and often alienation) many experience.

(Note: For the references cited and for more on this topic, see *Youth and Socially Interactive Technologies* -- http://smhp.psych.ucla.edu/pdfdocs/youth/socint.pdf .)

V. Enhancing Learning Supports to prevent problems and address barriers to learning

With reference to the matrix framework illustrated on page 2, below are examples of how technology can be used to enhance each of the six learning support content arenas.

A. Classroom-based efforts to enable learning. Technology can aid in

>preventing problems
>intervening as soon as problems are noted
>enhancing intrinsic motivation for learning
>re-engaging students who have become disengaged.

Building on the growing use of technology as teaching aids for all students, classrooms need to more versatile in working effectively with students who are not quite as ready as others in terms of their motivational readiness and current capabilities. Some of this is a matter of adapting and expanding the types of activities already highlighted in previous sections of this sampler. (Additional examples can be found in the What Works Clearinghouse.)

A useful guide and source of information is *Edudemic* http://www.edudemic.com/. The organization's website offers suggestions, guides, reviews, and links to major technology resources. For example, see *50 Education Technology Tools Every Teacher Should Know About* – http://fluency21.com/blog/2013/03/26/50-education-technology-tools-every-teacher-should-know-about/. This resource covers tools for (a) using social media to help students learn and teachers connect, (b) making lessons fun, interesting, and more effective, (c) pulling together lessons and designing student projects, (d) staying connected, organized, and (e) building multimedia lessons and learning tools.

More specialized applications can be found in centers focusing on students with disabilities. For example, see the

>National Center for Learning Disabilities: Assistive Technology
http://www.ncld.org/students-disabilities/assistive-technology-education/
overview-assistive-technology

Here's an excerpt from that site: "Complex, high-tech tools as well as common, more low-tech devices are all examples of assistive technology.... Complex or high-tech, assistive technology devices include:

- computers with print-recognition software that 'read' text aloud,
- speech recognition systems that turn oral language into written text,
- talking calculators that assist people with math difficulties, and
- software that predicts and edits words for people prone to spelling difficulties.

Struggling to stay current with assignments, needing personal assistance from parents, teachers, and tutors, and the frustration of not being in control can (and often does) contribute to feelings of helplessness and threats to self-confidence and self-worth. Assistive technology can be very effective in bolstering students' positive self-image and helping to empower them ..."
From Edutopia by Sarah Wike Loyola

10 Social Media Tips for Reaching World Language Learners
http://www.edutopia.org/blog/social-media-for-world-languages-sarah-wike-loyola

The following ideas can readily be adapted for classroom-based efforts to enable learning.

1. *Blogging* – is suggested as a way to keep students connected, even when they are no longer in class. "... the simplest way to get started is by posting a weekly question and having students respond -- once to your question by Wednesday, and once to someone else's response by Friday. You might even consider allowing students to provide the weekly questions."

2. *Twitter* – Micro-blogging via Twitter is indicated as another way to link students outside of class. You can use Twitter in class in a similar fashion to blogging. Sarah suggests using TweetDeck to efficiently manage students' tweets. She also states: "I also love having students tweet a story. You start by tweeting the first line of the story...." As students participate at different times during the day, they will need to read all the previous tweets before adding to the story." They can be asked to add to the narrative more than once. She notes: "I can assure you that reading them the next day in class will be a riot! This is another great example of interpersonal writing practice."

3. *Instagram* – Photo share a word of the day via Instagram. Sarah states: "Each school day, take a picture of something that would never likely appear on a unit vocabulary list, and try to include a student in the photo for fun. I use the app Aviary to add the vocabulary word in the form of a meme."

4. *Video* – "Video sharing via YouTube and Vimeo allows students to publish their work. The actual creation of a movie or video motivates students to learn how to plan, organize, analyze, edit, write and present. Once they finish their masterpieces, encourage them to share their work with the world via a site such as YouTube. Also, make time to watch them in class."

5. *SlideShare* – "Presentation sharing via SlideShare is a great mode for having students search, create, modify and share presentations with the world. It's like YouTube except that you're sharing and viewing presentations instead of videos."

6. *Google Drive* – "collaborative work through Google Drive, a file-sharing and editing site, makes group work simple. The site allows students to work on an assignment together outside of school."

7. *Collaborative Editing* – "The use of collaborative editing via Google Drive makes peer and teacher revisions incredibly easy."

8. *Facebook* – "Social networking via Facebook is always a fan favorite. It's as simple as creating a group page for your class, having them "like" it, and posting questions for them to answer and debate. This is also usually the easiest way to get in touch with them outside of class."

9. *Duolingo* – "If we make it fun through gaming, our students will be engaged. For language teachers, Duolingo is the route to student involvement when it comes to reviewing grammatical structures. Available in many languages, this app allows students to compete with one another and 'level up.'"

10. *Polling* – "Polling via popular 'free' sites such as Poll Everywhere, SurveyMonkey and Strutta can make your class interactive. Choose one of the sites mentioned, make a survey around a theme you are studying, and then allow students to text in their answers. It's a great way to create spontaneous interpersonal speaking practice in class, especially if you include fun images in the survey."

Technology and Classroom Data Gathering

Technology enhances a teacher's ongoing information on areas of strengths and challenges for each student. In discussing this, the *What Works Clearinghouse* states:

> "Effective, sustainable data use requires a secure and reliable data-management system at the district level. It provides detailed suggestions about how districts or other educational entities, such as multidistrict collaboratives or charter management organizations, should develop and maintain a high-quality data system."

"Armed with data and the means to harness the information data can provide, educators can make instructional changes aimed at improving student achievement, such as:

> >prioritizing instructional time;

> >targeting additional individual instruction for students who are struggling with particular topics;

> >more easily identifying individual students' strengths and instructional interventions that can help students continue to progress;

> > gauging the instructional effectiveness of classroom lessons;

> > refining instructional methods;

> > examining schoolwide data to consider whether and how to adapt the curriculum based on information about students' strengths and weaknesses

Excerpted from: *Using Student Achievement Data to Support Instructional Decision Making* – http://ies.ed.gov/ncee/wwc/PracticeGuide.aspx?sid=12

B. Support for Transitions

A relatively new arena for technology is assisting students and families as they negotiate hurdles to enrollment, adjust to school, grade, and program changes, make daily transitions before, during, and after school, access and effectively use supports and extended learning opportunities, and so forth.

(1) *Adjusting to a new school*

Here is an example from the Boston Public Schools related to identifying transitioning-in students who need learning supports.

>*Composite Learning Index* – a new tool to identify incoming secondary students at risk before they start school in September
http://www.bpe.org/files/GettingOnTrack.pdf

The Composite Learning Index (CLI) is a set of core computerized data. "[It] pulls important pieces of individual student data into a single, easy-to-use tool that school teams can supplement with data of their own. The CLI draws on all of the factors that are predictive of dropping out to provide a composite risk level for each student." For more, see
 http://www.bpe.org/files/GettingFamiliarCLI.pdf.

(2) *Extended day opportunities are transition programs.*

The transition from the formal school day is a critical one. To the degree feasible, schools try to support this transition with a variety of after school programs. And a parent survey about after school programs indicated that access to technology and computer literacy was a number one priority. In after school programs, computers and access to the Internet provide students with opportunities for assistance with school work and ways to enhance their motivation for learning at school. These include tutoring, motivated practice involving computer-based projects and simulations that solidify academics, and enrichment activities (e.g., sports, music, art).

The use of technology as a tool in after school programs is illustrated by efforts such as the *YouthLearn Initiative* (http://www.youthlearn.org/about-us/about-us) which provides a website, a growing online community, a free electronic newsletter, and an extensive manual called "The YouthLearn Guide." Their activities range from homework help (using web sites designed for that purpose) to service learning (e.g., using publishing software to create flyers announcing a community event). Examples of activities include:

- writing online in the early grades (when hand-writing and correcting work can be very burdensome),
- using math visualization software to illustrate patterns and changes over time,
- conducting research online using NASA resources,
- creating multimedia art, and
- interacting with online mentors in science, the arts, or engineering.

C. Home Involvement and Engagement in Schooling

Another new and rapidly growing arena for technology encompasses efforts to (a) enhance home involvement in supporting student development and learning, (b) improve mechanisms for communication and connecting school and home, and (c) strengthen the home.

Probably the most visible use of technology in this arena is the use of "robo calls" and email communications. We await research to determine whether these prove effective in enhancing engagement of the home and school. One thing is clear, however, this technology tends to be used as one-way communication tools.

Home involvement/engagement begins with well-designed welcoming and social support programs (see http://smhp.psych.ucla.edu/pdfdocs/practicenotes/welcomingstrategies.pdf). These include ensuring that the various initial information communications for newcomers are interactive and available in multiple languages, buddy and other social supports systems are established, invitations to participate in special events are personalized, and so forth. Most such programs are readily enhanced by technological tools that are readily available to schools. Of course, some activities (e.g., email exchanges) are only feasible if the home is connected to the internet.

For a range of interactive technological tools for enhancing home involvement and engagement, see Edutopia's *Home-to-School Connections Guide –*
        http://www.edutopia.org/pdfs/edutopia-home-to-school-guide.pdf.

Here is an excerpt:

> "...Technology tools offer great potential for connecting home and school. Several tips focus on ways to use these tools to bring parents closer to the classroom. We've included suggestions for using popular social-media tools such as Facebook (Tip #1: Go Where Your Parents Are) as well as technology platforms designed specifically for school settings (Tip #3: Being There, Virtually).
>   When it comes to keeping families up-to-date on school activities, it's not enough to stuff newsletters into kids' backpacks. Increasingly, social-media tools such as Facebook and Twitter are helping to keep parents and other community members in the loop. The new motto is "Go where our parents are." The same parents who might browse a school website a few times a year are apt to be on Facebook every day. What kind of information are schools posting on their social-networking sites? Content ranges from the predictable, such as school lunch menus and daily announcements, to the creative schools that publish podcasts on Facebook and on the district website. Some teachers use Facebook to update parents about what happens during the school day. Having students post daily updates prompts them to reflect on learning and synthesize information.
>   Instead of delivering a top-down message, social-media tools allow for back-and-forth dialogue between home and school. This can facilitate discussions in both large and small learning communities. Parents and other community members can weigh in with a thumbs-up, ask a question, or voice an opinion about school issues
>   Tools like Google SMS-Translate will help you reach out to non-English-speaking families who use mobile devices
>   A family technology night offers the perfect opportunity to introduce these new-media resources to your parent community. Encourage adults to bring mobile devices if they have them. Have school computers available for parents to use too. Give adults time to test-drive tools while you're together. ..."

D. Crisis Prevention and Response

Every school must anticipate and work to prevent crisis situations, respond to crises when they occur, and strive to minimize the impact of crises. Below are examples of technological resources to aid with two major facets of work in this arena, namely (a) accessing information for planning and to guide responses after a crisis and (b) communicating when a crisis occurs.

Technology Has Made Phone Chains a Thing of the Past!

About Alert Systems for Communicating with Parents When a Crisis Occurs

Schools around the country are putting alert systems in place. For example, Contra Costa County in California has a *Community Warning System* that notifies people simultaneously via multiple mechanisms, such as Twitter, Facebook, cellphone, Telephone Emergency Notification System (TENS), television and radio alerts – http://www.co.contra-costa.ca.us/index.aspx?NID=161.

The *Campus Safety Magazine* reports on a variety of digital and social media protocols for notifying parents in the event of an emergency – http://www.campussafetymagazine.com/default.aspx.

Websites have compiled extensive resources to aid crisis planning and response. Our Center provides direct links to such websites and is itself a clearinghouse for crisis resources – see http://smhp.psych.ucla.edu/crisisresp.htm.

E. Community Outreach for Involvement and Support

In addressing barriers to learning, schools can and need to play a role in building linkages and collaborations with the community stakeholders. Done effectively, the efforts can strengthen students, school, families, and neighborhoods.

The work entails the school outreaching to bring the community in and helping to ensure that the community's contribution is well publicized and accounted for.

Here's how technology aided all this in Northern Kentucky:

Excerpt from: *New Data tools Track Time and Money donations to help measure impact* http://www.readyby21.org/case-studies/readysnaps-northern-kentucky?utm_source=Ready+News+Jan5+14&utm_campaign=Constant+Contact&utm_medium=email

"For years, businesses in Northern Kentucky have contributed uncounted hours to help local schools — by activities such as making employees available during work hours to tutor students, raising funds to rebuild playgrounds and providing internships to promote career readiness. The "uncounted" part was frustrating: No

one measured or coordinated all that work, leaving business leaders unable to tell the story of their contributions or know if they were putting their resources where they were needed most.

Now they're using data to solve that problem.

A new data collection tool developed by the Forum for Youth Investment has given Northern Kentucky its first glimpse of the total value of business contributions to local schools. And the Northern Kentucky Education Council (NKYEC), which coordinates the Ready by 21$^{©}$ initiative in the region, is building on that tool to create a system for measuring the impact of those contributions and filling gaps.

The seeds of this effort were planted in 2010, when the nonprofit NKYEC underwent an ambitious overhaul to broaden its mission beyond a traditional classroom focus. Through the Ready by 21 Southeast Cities Challenge, the council used Ready by 21 tools and technical assistance to become the region's umbrella organization for the alignment of education initiatives that support young people from birth to career....

The challenge: Even within the businesses themselves, almost no one was tracking the many kinds of engagement. The action team worked with the Forum to create an online survey to help each of the 56 businesses involved track what it was doing. Among the objectives:

>Give each business data to quantify and report what it was doing, for which schools and how often.

>Use the findings to coordinate efforts among businesses and fill gaps.

>Help ensure that the contributions of businesses aligned with priorities established by the council.

Each business received data and charts showing its contributions by goals (such as boosting literacy and increasing student engagement) and by schools.

Overall, the largest area of contribution was for college and career readiness — a council priority. The survey also found gaps in services in middle schools, where many children can benefit most from the help.

The council is spearheading the effort, in collaboration with a local university, to create the tracking tool in hopes of answering such questions as: Are schools with high level of business engagement performing at higher levels? How many students are placed in internships? Are resources being invested in the most critical areas? Are the investments affecting reading proficiency, graduation rates, and college and career readiness? The team knows it can't make a direct correlation between business engagement and student achievement, but believes the tracking tool will generate meaningful data.

To help engage more businesses in contributing to schools and recording their contributions, the action team produced a toolkit that highlights high-impact opportunities for businesses and provides a link to the data tool"

F. Students and family support

When necessary, schools need to facilitate access to effective services and special assistance on campus and in the community. Increasing emphasis is being focused on how interactive technology can help in this arena. For example:

(1) ***Treatment*** – A special section of the *Journal of Clinical Child & Adolescent Psychology* (2014) http://www.tandfonline.com/toc/hcap20/43/1 focuses on "Technology And Children's Mental Health" – see the following articles:

> "The Feasibility and Acceptability of Virtual Environments in the Treatment of Childhood Social Anxiety Disorder"
> "Internet-Delivered, Family-Based Treatment for Early-Onset OCD: A Preliminary Case Series"
> "Technology-Enhanced Program for Child Disruptive Behavior Disorders: Development and Pilot Randomized Control Trial"
> "Understanding Adolescent Response to a Technology-Based Depression Prevention Program"
> "Using Videoconferencing to Provide Psychological Services to Rural Children and Adolescents: A Review and Case Example"
> "Future Directions in the Design, Development, and Investigation of Technology as a Service Delivery Vehicle"

(2) ***Online screening*** – The Diagnostic Interview Schedule for Children (DISC-IV) provides an example. This structured diagnostic instrument assesses thirty-four common psychiatric diagnoses of children and adolescents. As described in the *Interviewer Manual*, the online version, "Voice DISC is self-administered, more instructional screens are presented in order to get the youth immediately accustomed to how to respond to the questions and how to use the computer. It also gives the supervisor the chance to check that the youth is able to complete the DISC independently." See Columbia University's DISC Development Group's *Interviewer Manual* –
    http://www.cdc.gov/nchs/data/nhanes/limited_access/interviewer_manual.pdf

(3) ***Tele-health clinics for schools*** – An example is described in a news article from Michigan (http://www.thedailyreporter.com/article/20140102/NEWS/140109911).

"Students aged 12 to 21 will have access to health care without having to go to the doctor's office. The Community Health Center of Branch County (CHC) received a State of Michigan Department of Community Health transformational grant in 2013. The clinics will provide primary healthcare services via tele-health equipment through the CHC Adolescent and Pediatric Center on the CHC campus. The clinics work with, and are not meant to replace, the student's family physician. The clinics will provide primary care services for acute illnesses and minor injuries such as strep throat, ear infections, rash, and influenza; and preventative care such as immunizations. Parental consent must be provided before any student is seen. No student will be denied services. Insurance will be billed for services provided in the clinic. For those students that are uninsured or underinsured, insurance enrollment assistance will be provided. A registered nurse will be located at each site who will examine the student using the tele-health equipment. The equipment will transmit the information and video to the physician or physician assistant (PA) at the Peds Clinic. The physician or PA will then make a diagnosis and can write and send in a prescription to the pharmacy if needed...."

VI. Professional development to enhance use of interactive technology for learning supports

A. Preparing new teachers & support staff through interactive technology

Excerpt from news article on: *Teacher Colleges Seek to Shift to Digital Age* – http://www.edweek.org/ew/articles/2014/01/29/19el-teachers.h33.html?tkn= XTSFOlp72dCtdsWzTZsewxsUilbde%2FjHZHKf&print=1

"At Clemson University, aspiring teachers are working together to develop and review digital lessons. They're learning how to use social media to find classroom resources. And they're being encouraged to partner on projects that emphasize technology with students from other majors.

Those strategies reflect a shift underway at some teacher colleges that are working to revamp their programs to improve the technology literacy of future educators-and address what many see as a major shortcoming in the profession.

Technology is swiftly assuming a dominant role in classrooms, and in students' lives. Many observers have raised doubts about whether schools of education are providing future teachers with the skills they need to address blended learning, and whether they're using digital tools to improve instruction....

The National Association of State Boards of Education, in Alexandria, Va., released a report in 2012 that cast a critical eye on teacher colleges' performance in building digital skills. It said that the training of teachers "too often has not kept pace with advances in technology or new ways of learning," and asserted that educators were not being prepared to use technology to personalize learning or shape students' analytical skills.

A report released last year by the Washington-based American Association of Colleges for Teacher Education, meanwhile, found that nearly all of teacher education programs, 98 percent of them, prepare students to use technology for instruction, and that 62 percent have a technology-related requirement for graduation or program completion....

The University of Texas at Austin's UTeach science program, which oversees more than 6,000 preservice mathematics and science teachers at 40 universities nationwide, recently received a grant from telecommunications giant Verizon to integrate mobile technologies into inquiry-based lessons....

In January of last year, Teachers College, Columbia University, opened a prototype technology-demonstration classroom. The program allows students in the technology-specialist-certification program, who include preservice and working teachers, to gain more experience learning in a technology-rich environment...."

B. Ongoing professional development using interactive technology

Excerpt from news article on: *"Flipped' PD Initiative Boosts Teachers' Tech Skills* – http://www.edweek.org/dd/articles/2013/06/12/03whatworks.h06.html

"...The collaborative, technology-driven nature of the relationship between teachers and the technology coaches is the hallmark of what the Stillwater [MN] district calls 'flipped professional development.' Known as job-embedded

coaching in educational leadership circles, flipped PD offers face-to-face support and personalized online resources, such as how-to videos on using interactive-whiteboard software or the iPad's multi-tasking bar. Teachers watch the videos to find new or better approaches and then discuss developing those approaches with the technology-integration specialists....

Stillwater started flipped PD in 2011-12. Here's how it works: district technology staff meet with 200 classroom teachers and specialists in small groups each month for structured, two-hour coaching/training and workshop sessions that focus on individual projects, then offer additional guidance by request. So far, the model is used in all nine of the district's elementary schools, with 93 percent of classroom teachers participating....

Unlike in traditional professional development, context plays a critical role in flipped PD. Content area, grade level, technological expertise, and the interests of each teacher and specialist affect the type of online training offered....

The district produces four types of videos. 'Proactive' videos are typically tutorials covering the basics of Stillwater's most-used technology tools. 'Reactive' videos are created in response to a specific request; one teacher, for example, learned how to create a video about online bullying after an incident the day before. 'Spontaneous capture' videos document best practices, project ideas, and success stories. And 'individual backpack' videos are raw, unedited snippets created on the fly to answer specific questions....

As with any new initiative, there are lessons to be learned from one year to the next. The Stillwater school system in Minnesota, in its second year of using a professional-development model called 'flipped PD,' learned several lessons:

> Include principals, not just teachers. In the first year, conversations with principals in schools that used flipped PD often shifted from how it was helping teachers to the way technology could help school leaders be more efficient and manage personnel more effectively.

> Strengthen the use of online resources. A collection of succh resources is useful, but teachers and specialists would learn even more if those resources were available through an online course.

> Allow teachers to self-reflect. It took until the second yeear to realize a self-reflection process would be invaluable for teachers and specialists. Now they''re asked to write in online journals throughout the school year about their flipped-PD experiences.

> Realize the potential for continuous growth. Michael Dronenn, Stillwater''s technology director, says that had the district understood earlier how much of an impact flipped PD would have on continuous growth, it would have accelerated the rate of adoption.

To increase collaboration and transparency, the technology specialists guide teachers through the use of Google Docs to set goals for the year, link to videos and other resources, and chronicle their progress.

In the first year, three teachers began helping students publish their own books using text and images. That number jumped to nearly two dozen this school year. Meanwhile, students are collaborating more, some are blogging, and their tech-related vocabulary is expanding..."

VII. Technology to support unifying and developing a comprehensive system of learning supports

Our Center is in the process of developing resources and gathering examples of how places are using technology in working on unifying and developing a comprehensive system of learning supports. We see technology as playing a key role in designing, developing, and implementing such a system. Technology aids in (a) introducing and social marketing the work, (b) enhancing communication and managing data/information, (c) building capacity (especially via mentoring, coaching, and professional development) – and more.

A. Introducing and social marketing the work

The Center has developed a web-based toolkit to aid in *Transforming Student Supports into a Unified & Comprehensive System for Addressing Barriers to Learning and Teaching* – http://smhp.psych.ucla.edu/summit2002/resourceaids.htm. The toolkit provides technology oriented resources for introductory work and social marketing (e.g., power point presentations, webinars, a Learning Supports System Website Prototype).

B. Enhancing communication and managing data/information

>See the Center sampler Using *Technology to Address Barriers to Learning* – http://smhp.psych.ucla.edu/pdfdocs/sampler/technology/techno.pdf

>See the Center's Quick Find on *Data Management Systems* – http://smhp.psych.ucla.edu/qf/datasystems.htm

C. Capacity building

An example from the field comes from Bloomington (MN) school district where the leadership team responsible for unifying and developing learning supports into a comprehensive system is using the internet to advance the work and has shared their use of moodle. See *https://moodle2.bloomington.k12.mn.us/course/view.php?id=674* . [Note they report that they have just started to use the Forum feature as a place to articulate successes with Learning Supports in the district.]

Mentoring, coaching, and professional development are aide by the power point presentations, webinars, and websites mentioned above. In considering distance mentoring and e-coaching, see Section C of the Center's toolkit for the practice guides related to phasing in the system – http://smhp.psych.ucla.edu/summit2002/resourceaids.htm. The Center is currently exploring development of a flipped professional development approach.

As we hear from others about their use of technology in working on unifying and developing a comprehensive system of learning supports, we will send out the information through the Center's various news vehicles and add them to Quick Finds, toolkit, and samplers.

VIII. How to connect with our Center through interactive technology

- Initiate an email indicating a request for information or share information about your work. Send your email to ltaylor@ucla.edu .
- Respond to our weekly community of practice school practitioner listserv and the emerging issue in our monthly *ENEWS*. Send to ltaylor@ucla.edu .
- Join the folks on our facebook page (access from our website homepage and add comments to the postings.
- Take a tour of the wealth of resources on our website http://smhp.psych.ucla.edu. [Click on *First Visit* for an overview of features; go to Resources and Publications for an overview of Center resources.]
- If you are looking for a specific topic, go to online clearinghouse Quick Find menu and scroll down list of over 130 alphabetized topics.
- And if you can't find what you need, email Ltaylor@ucla.edu or call us at 310-825-3634.

**Tyack and Cuban
describe school reform
as *Tinkering toward Utopia***

**In this age of social media, it seems
more like *Twittering toward Utopia!***