



## **The Role of Web 2.0 Technologies in K-12 Education**

*A VSTE Advocacy White Paper*

### **Overview/Definition of Web 2.0**

The Web today is ripe not only with great content, but with new tools that foster productivity and the power of publication. While there are technical reasons behind it, many of today's websites offer functionality once considered unique to desktop programs. Today we can edit photographs, create formulas in spreadsheets, and prepare presentations with multimedia together in a single window: the web browser. Some are calling this new generation of tools the "Read/Write Web" because instead of just being able to download content others have created using complex languages such as HTML, JavaScript, and others, we can now easily use the Web to publish or "write" our own content. But the Web today even goes beyond writing tools such as wikis and blogs; it includes photo editing, video streaming and hosting, and tools that help us organize the overload of content being published. This new era of productivity offered by today's World Wide Web is being called by many "Web 2.0."

There are both challenges and convenience brought about by Web 2.0 tools. This document is going to share examples of some great Web 2.0 tools we believe can make a positive impact in the lives of children. As you peruse some of these websites, you will discover that many of them offer the convenience of cost: many are free to use. Others offer convenience in storage: the website holds your work, and it's easy to work on projects using different computers because the content stays put in the "Internet cloud", the servers running these new Web 2.0 websites. Another key convenience is the collaborative features many Web 2.0 tools provide. Sharing documents with colleagues, or among students, is simple compared to methods normally undertaken in a school environment. In fact, some Web 2.0 tools today allow the simultaneous editing of documents between two or more users.

There are challenges facing educators today who want to take advantage of Web 2.0 tools. One challenge is bandwidth. To gain access to documents and projects online, schools need a reliable connection to the websites hosting the documents. Adequate funding must be made available to help schools address this issue.

Another challenge is filtering. Because many Web 2.0 tools are open to the public, the creators of these sites do not filter the content creation of others. In a school environment, educators do want to maintain some control over what comes into the school, over the wire and onto computer screens. However, simply filtering all such interactive applications means that students will not be able to learn how to use such applications to support their learning in the future. One way to address this challenge is to take advantage of education-friendly features of

Web 2.0 tools. For instance, edublogs offer ad-free blogging software for schools while wikispaces offer free private sites for K-12 schools. Finally, content management systems such as Blackboard and Moodle have built in Web 2.0 tools thus allowing students to use the tools in a secure environment. VSTE would encourage educators to find ways to balance privacy and access in order to give students access to these digital tools for learning.

### **Relevance for Teaching and Learning**

Our students are already using these tools for their own purposes. In its recent report *Living and Learning with New Media: Summary of Findings from the Digital Youth Project*, the MacArthur Foundation reported on the results of a three-year ethnographic study of how young people participate in the new media ecology. The study was driven by two questions: How are new media being integrated into youth practices and agendas? How do these practices change the dynamics of youth-adult negotiations over literacy, learning, and authoritative knowledge?

The findings suggest that today's students are immersed in the world of social networks where tools such as those described above are part of their everyday lives. Social network sites, online games, video-sharing sites, and gadgets such as iPods and mobile phones are now fixtures of youth culture. They have so permeated young lives that it is hard to believe that less than a decade ago these technologies barely existed. Today's youth may be coming of age and struggling for autonomy and identity as did their predecessors, but they are doing so amid new worlds for communication, friendship, play, and self-expression.

But, as mentioned, many of these tools are filtered in schools despite their increasing importance to our students.

Our students will be living and working in this networked environment in which they must be able to locate, manage, create, and communicate online content. Even now, Web 2.0 tools are being utilized in the workplace, media and home. Hospices create blogging accounts for families of their patients, professionals co-write media using on-line documents (the VSTE board of directors wrote this paper online using a collaborative tool), major news corporations have interactive blogs, forums, and customizable RSS feeds that provide enhanced access to information. Many professional organizations, businesses, and governments use social networking frameworks to provide professional development, collaboration, and a community connecting individuals the world over. Our students need experience with these Web 2.0 tools. Continued exposure and familiarity with free, online tools will enable students to develop valuable communication skills in a 21st century environment.

With the task of preparing students for a future that is increasingly digital and driven by information access, educators must think creatively to meet the needs of all students. By integrating tools with research-based learning strategies, educators can enhance and transform the traditional learning environment. For instance, a teacher who is implementing cooperative learning might adopt a collaborative tool such as a wiki where students can share resources and draft text together. In place of or in addition to a traditional research paper, students might create a website or online presentation that incorporates text, images, and video to build knowledge and demonstrate learning. They might then invite others from both in and out of the school to comment on their work. As they create these projects, students can learn about multimedia design, inference, and visual impact and begin to develop their own skills in using these tools to communicate and collaborate.

Using web 2.0 video conferencing services, educators and students can converse with experts (scientists, engineers, even astronauts) who can help make real world connections to the

curriculum. The timeless current events assignment can be brought up to date by allowing students to online newspapers and news related blogs online and encouraging them to publish their own comments. Reading may come to life as students log into authors' or publishers' websites to discuss an article or book with readers from around the world.

Web 2.0 tools are powerful mediators between students and the world around them, and they may motivate students to continue learning outside the classroom. Such tools have the potential to initiate and enhance the love of life-long learning. Some students are already tapping into the potential for exploration and learning. While many students are using these tools socially, the MacArthur Foundation study describes others who are using the web and web-based tools to pursue their passions, engaging in self-directed, peer-based learning where they seek out others who share their interests.

The MacArthur Foundation encourages educators to consider social media as a teaching and learning tool:

Contrary to adult perceptions, while hanging out online, youth are picking up basic social and technological skills they need to fully participate in contemporary society. Erecting barriers to participation deprives teens of access to these forms of learning. Participation in the digital age means more than being able to access "serious" online information and culture. Youth could benefit from educators being more open to forms of experimentation and social exploration that are generally not characteristic of educational institutions (p. 2).

Using these technologies can help students develop the kinds of knowledge, skills and dispositions needed for success in a digital environment. The National Educational Technology Standards for Students define the range of abilities associated with digital technologies. While the standards include technical skills, they also suggest that students need experiences related to communication, research, and critical thinking that will foster their digital citizenship.

These kinds of experiences will help contribute to the development of what the National Council of Teachers of English (NCTE) call "21st century literacies":

Literacy has always been a collection of cultural and communicative practices shared among members of particular groups. As society and technology change, so does literacy. Because technology has increased the intensity and complexity of literate environments, the twenty-first century demands that a literate person possess a wide range of abilities and competencies, many literacies. These literacies—from reading online newspapers to participating in virtual classrooms—are multiple, dynamic, and malleable.

VSTE believes the convenience and power of both established and emerging Web 2.0 tools should be a positive addition to the toolkit used by modern educators, from administrators, to classroom teachers, and instructional technology resource teachers (ITRT). Implementation demands ongoing education and support as well as adequate access to digital tools for both teachers and students. For teachers, professional development must help them not only learn how to use tools technically but how to integrate them into instruction. For students, learning about using the tools safely and ethically is essential. Virginia has mandated the teaching of Internet Safety in all its schools. Using Web 2.0 tools offers the perfect opportunity to introduce students to good computing practices from how to safely share information to how to engage in civil discourse. If students do not have the chance to try out these tools, they will be left somewhat defenseless when they encounter them outside the classroom. VSTE believes that these tools are relevant to our students and should be more widely adopted to support student

learning.

There are several notable examples of the use of these tools in Virginia to support both professional development and classroom instruction.

### **Classroom Examples of Web 2.0 Applications**

While Web 2.0 applications address a wide variety of needs, they share one essential feature: they are interactive and allow users to connect and collaborate with both the Web and other people. Several, in particular, have been successfully adopted in Virginia for professional development and to support teaching and learning. When you see some of the projects created with today's Web 2.0 tools by educators in Virginia, we hope you will join us in advocating the use of these same or similar tools in your school.

*Blogging:* A blog is an on-line journal. It may be authored by an individual or a group wishing to communicate their research and/or opinions on one particular topic (i.e. newly released Web 2.0 tools). The periodical entries may use mixed-media as they include text, images, audio and video to portrait their message. An audio blog is often called a podcast. The main characteristic of blogs that set them apart from the average website is that bloggers (blog author/s) can choose to allow public comments on their blog -thus creating an avenue for ideas to expand and increase reader understanding. In addition, users can subscribe to blogs and have new content delivered to them as it is published, making it easier for them to locate, organize, and follow the information.

- In Botetourt County, middle school students are reading Randy Pausch's *The Last Lecture* and using a blog to write their reflections and thoughts as they read. You can read their comments here:  
<http://teacherweb.com/Blog/VA/RMMS/BethAllen/2/default.aspx>.
- At the K-5 level, Mr. C's Class Blog (<http://mrcsclassblog.blogspot.com>) is updated almost daily and even has a live stream into Mr. C's classroom.
- Melanie Adams, a middle school librarian at Haywood Secondary School, a grade 7-12 school in Fairfax County, uses blogging software to track student reading as part of the Virginia Readers' Choice program. In the VRC program, a student may take part in the state-wide vote for his/her favorite VRC book if the student has read at least four of the 10 books in the program. At the middle school level, tracking student reading is challenging because of the large number of students. The blog allows students to make comments, thus engaging them in their reading, but also makes it easy to track their progress.
- Loudon County uses [www.epals.com](http://www.epals.com), a free, safe and secure email, blogging and discussion board service that connects students and classrooms from around the world.
- Currently Chesapeake Public Schools encourages all teachers to use CPS Connect, a blog using Wordpress MU. By housing Wordpress on our server, we are able to offer controlled blogging while maintaining the security of our students and ensuring network integrity.
- Henrico County ITRTs have created a website for teaching about the Virginia Studies SOL. The site uses podcasts and a blog to focus on the content.  
<http://www.virginiatrekkers.com>. The ITRTs also use blogs to share technology ideas and lesson plans with the teachers they serve.
- Wendy Sellors, a media specialist at Maggie L. Walker Governor's School in Central Virginia, uses her blog to communicate with her school community. She posts items of interest and includes links to research resources. Visit her site:  
<http://mwlibrary.wordpress.com/>

*Social Networking:* Social networking refers to a broad class of web sites and services that allow you to connect with friends, family, and colleagues online, as well as meet people with similar interests or hobbies. MySpace and Facebook are two of the most well known social networking sites but there are many others. Many sites let you create a profile where you can post photos, information about yourself like location, hobbies, and relationship status, and send and receive messages with online contacts.

- Using an online social networking tool called Ning, The Virginia Society for Technology in Education provides a space where educators from around the world can come together to discuss education and the challenges and opportunities of using technology to support instruction. Explore the site here: <http://vsteonline.ning.com>
- Lori Layman, an ITRT in Warren County, uses a private Ning to support her school's book studies. Teachers were able to use the social network to supplement the face to face meetings. Towards the end of the book study, however, the Ning took the place of those face to face meeting. Their "Learning of All" Ning is public and can be viewed here: <http://rjeslearningforall.ning.com/>
- In Henrico County, educators use QLubb as a place for school staff to share files, photos and a calendar, which is useful for scheduling meetings. Visit <http://www qlubb.com> to learn more.
- In Loudon County, educators have access to [www.cilc.org](http://www.cilc.org) , a free social networking service for teachers, administrators and technology personnel, as well as a database for videoconferencing providers.

*Wikis:* A wiki is a web site that comprises the work of many authors. A wiki allows anyone to edit, delete or modify content that has been placed on the Web site, including the work of previous authors. Wikipedia, the online encyclopedia that encourages user editors, is probably the most well known example of the use of this tool.

- The Regions of Virginia Wiki is a state-wide collaborative project in which 4th graders learn together about the regions of the state. You can view the project at <http://regionsofva.wikispaces.com/>.
- When online students in Lunenburg County faced a week of "free" time before their online class started, they decided to use a wiki-style website called Jottit (<http://jottit.com>) several teachers collaborated to develop a week's work of webinars related to success in taking online courses. The website is available at <http://lunenburg.jottit.com/>.
- Chesapeake Public Schools are conducting a pilot using Wikispaces (<http://www.wikispaces.com>) for educators. If our pilot is successful, our intent will be to deploy Wikispaces in a semi-controlled manner by the beginning of the 2009-2010 academic school year. Ensuring student safety is of primary concern as Chesapeake's explores the use of Web 2.0 tools.

*Social Bookmarking:* Social bookmarking websites allow users to note sites of interest online with the convenience of sharing these bookmarks with other users. Many allow for additional functionality not found in typical browser bookmarking applications. These include keyword tagging, RSS feeds, and the ability to comment or annotate the resource. Goochland County has used a shared delicious account to collect educational websites of interest and has tagged each site with an age-appropriate level, subject area, and in some cases, matches for Virginia SOL: <http://delicious.com/gcps>.

*Voice Thread:* Voice Thread is an online collaborative multimedia authoring tool. Creators share their threads and allow users to comment and discuss the content. Users can use audio, video

or text to create their comments.

- Roanoke ITRT Meg Swecker has been using VoiceThread to record her scuba diving trips and share them with students: <http://mswecker.edublogs.org/ocean-voicethreads/>.
- Two fifth grade teachers and their students in Virginia Beach have created a VoiceThread reviewing famous people to know for Virginia Studies. You can view it here: <http://voicethread.com/share/122463/>.

*Productivity and Collaboration Applications:* Several websites offer suites of robust authoring tools. These applications are similar to the authoring applications found on an average computer. Users can create text documents, slide show presentations, spreadsheets and even web pages. Productions can be e-mailed, downloaded and opened or printed on an individual's computer. What makes these applications most powerful is that each composition may have multiple authors. The VSTE Board of Directors used one application--Google Docs--to compose this paper. Using these tools, students, teachers and administrators may collaborate to collect, compose and present information. While these applications allow collaboration, they also address privacy concerns. The authors are in control of who might view their work, as they have the option to post the document to the Internet, make them available to a select few, or to keep the private.

- Mecklenburg County is using Google Docs for a variety of different applications. In particular, students in Accounting and Business Accounting courses are using spreadsheets to collaborate with students not only in Mecklenburg County but also in Oregon. Students at Park View High School worked with Oregon students to complete a Cost of Living Analysis for their communities and to complete a Business Ethics unit based on Chick Fil-A's Recipe for Success. You can review the various projects by viewing this Google Doc: [http://spreadsheets.google.com/ccc?key=p-Psuk\\_8y4Jj5lfH\\_jUrheA](http://spreadsheets.google.com/ccc?key=p-Psuk_8y4Jj5lfH_jUrheA)
- Warren County ITRTs use Google Docs for many tasks. It was fundamental in sharing ideas and creating the county's Internet safety curriculum. They also create Google Docs for the conferences that we attend. During or after the conference, they summarize the sessions which they attended and share links to resources.
- Henrico County ITRTs use Zoho for computer cart signups: <http://creator.zoho.com/dclough/cow-signups>
- Fluvanna County has signed up for Google Apps. It will allow the district to monitor student email and documents. Teachers are able to create unit plans and collaborate real time on the web, then publish those documents when they're ready. The calendar portion lets users publish events to the world, select users, or just to county users with the appropriate Google apps login. More here: <http://sites.google.com/a/apps.fluco.org/instructional-technology/google-apps-handouts>

*Putting It All Together:* At Cooke Elementary School, Computer Resource Specialist Fara Faust is making use of a variety of free web-based tools, demonstrating how these different tools can be easily integrated in instruction. Fara uses a weblog to post student work, which includes podcasts and voice threads in which students demonstrate their knowledge of the Standards of Learning. Fara also uses a wiki to share information and student work. In addition to supporting instruction, these tools facilitate communication between home and school.

- Cooke ES Weblog: <http://blogs.vbschools.com/BroadcastCooke/>
- Cooke ES Wiki: <http://cookekids.wikispaces.com/>

## References

Living and Learning with New Media: Summary of Findings from the Digital Youth Project,  
Available Online at

[http://www.macfound.org/site/c.lkLXJ8MQKrH/b.4773437/k.3CE6/New\\_Study\\_Shows\\_Time\\_Spent\\_Online\\_Important\\_for\\_Teen\\_Development.htm](http://www.macfound.org/site/c.lkLXJ8MQKrH/b.4773437/k.3CE6/New_Study_Shows_Time_Spent_Online_Important_for_Teen_Development.htm)

The NCTE Definition of 21st Century Literacies, Available Online at

<http://www.ncte.org/positions/statements/21stcentdefinition>

National Educational Technology Standards for Students, Available Online at

[http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/NETS\\_for\\_Students.htm](http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/NETS_for_Students.htm)