

Cloud Computing: A Free Technology Option to Promote Collaborative Learning

In a time of budget cuts and limited funding, purchasing and installing the latest software on classroom computers can be prohibitive for schools. Many educators are unaware that a variety of free software options exist, and some of them do not actually require installing software on the user's computer. One such option is cloud computing. This popular technology trend has been gaining momentum over the last 4 years.

Cloud computing is a computing technology that uses the Internet and central remote servers to maintain data and applications. Cloud computing allows students and teachers to use applications without installing them on their computers and also allows access to saved files from any computer with an Internet connection. This technology involves much more efficient computing by centralizing storage, memory, processing, and bandwidth. It also enables a number of individuals to simultaneously work on a project—regardless of their location. The term *cloud computing* is used because the services and storage are provided over the Internet (or cloud).

Some of the better known cloud computing offerings consist of productivity tools (i.e., word processing, spreadsheet, presentation, drawing, and conferencing programs). Google Docs (<http://docs.google.com/demo>) is the best known of these (see "Moving Beyond Google Searches: Google Earth, SketchUp, Spreadsheet, and More" in *Gifted Child Today*, Vol. 30, No. 1, pp. 24–28 for information on Google Docs). Over the past 4 years, Google has steadily improved these programs through its own

development teams and by acquiring other companies with innovative additions (such as <http://www.etherpad.com>). Zoho (<http://www.zoho.com>) is another program that offers an impressive suite of online productivity tools that permits users to collaborate on projects.

For example, a student in New Jersey could be collaborating with a student in Hawaii on a presentation that they share with a student in Paris by using the cloud computing services of companies like Google and Zoho. Best of all, the service is free; no software needs to be installed. The programs run on the Internet, and the files are saved on the Internet.

Although Google led the charge 4 years ago with its online documents, its dominance of cloud computing is now being challenged by the major producer of productivity software. Microsoft recently established large data centers in Houston, Chicago, Ireland, and other locations and has launched cloud services for its popular Office program (<http://www.microsoft.com/cloud>). Microsoft's Office Web Apps on SkyDrive allows users to create, edit, and share Office documents with people who have Office and those who do not. Two people can simultaneously edit the same spreadsheet, Word document, or PowerPoint presentation from different locations through a PC, the web, or a Windows Mobile phone (Chan, 2010). Microsoft, like most of the free cloud computing providers, implants advertisements into the applications to support the service.

Students and educators who do not have the Office program can now create Word, Excel, PowerPoint,

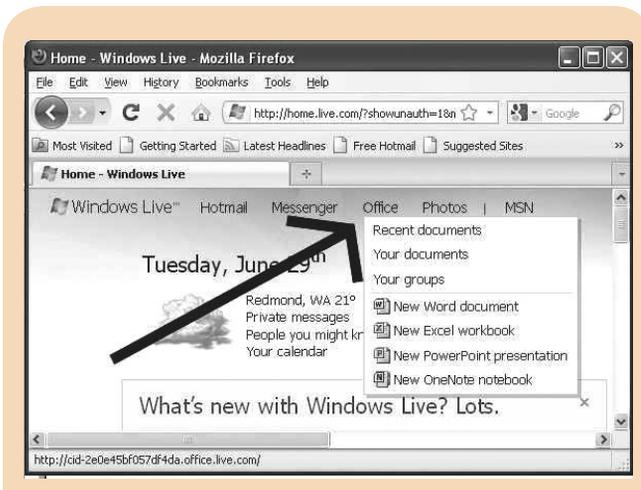


Figure 1. Microsoft has joined the cloud computing movement with free web-based versions of its popular Office Suite.



Figure 2. Young students can easily make simple improvements to their digital images with Picnik.

and OneNote documents on Windows Live (<http://www.windowslive.com>). Users must have a Windows Live login. With it, they can freely create, edit, save, and share documents without installing any software. After logging into Windows Live, students can access files they have saved or create new files from the **Office** tab at the top of the page (see Figure 1). And conveniently, like in Google Docs and Zoho, the documents they create are available for editing and sharing from any computer connected to the Internet.

There are four major advantages to cloud computing. First, multiple copies of software applications do not need to be installed on computers around the school. This saves time and the cost of site licenses. Second, although documents created with these applications can be downloaded to the user's computer, they are usually saved on the software provider's server, so they can be accessed from any computer connected to the Internet. Third, in many cases, the creator of a document can invite others to view and even edit the document. Several people in different locations can be interacting simulta-

neously with a single document. This eliminates the need for multiple versions of the same document—the current version is the latest version. Finally, in many cases, each version of the document is saved and previous versions of a document can easily be retrieved. Some cloud computing options contain all of these features, while others contain one or two of them.

Businesses are finding that cloud computing saves time and money, and schools will also find cloud computing to not only be “budget friendly,” but educationally beneficial. Students can learn a variety of computer production skills in a collaborative learning environment. Projects started at school can be continued at home without having to transfer files or download compatible software.

In the not too distant future, it is conceivable that cloud computing may be the standard platform for all software, and users will pay a monthly or yearly fee for using the services. Several software providers have already moved to this business model. Although fee services already exist, all of the pro-

grams shared in this column are free. Some of these options are filled with advertising, others are not. Some require a user login and password (essential for storing and retrieving files), although many do not.

In addition to the popular productivity tools provided by Google, Zoho, and Microsoft, new specialty software has surfaced that features some of the cloud computing components described above, but not necessarily all of them. Educators will find several of these programs very useful. The remainder of this column is dedicated to sharing a few of them.

Photo Editing

Digital recording devices have become ubiquitous. In addition to the widespread availability of digital cameras, digital recording devices are now built into most computers and cell phones. The images from many of these devices can be improved and enhanced with photo editing software. Increasingly, in this digital age, ideas are being expressed visually. Being able to express oneself visually is becoming

a useful communication tool. Students enjoy taking and editing digital photographs. They also can learn to improve the images they use in the presentation they make and the products they create. Whereas Google's Picasa (<http://picasa.google.com>) is a popular and free photo editing software that can be downloaded and installed on users' computers, Picnik (<http://www.picnik.com>), Splashup (<http://www.splashup.com>), and Pixlr (<http://www.pixlr.com>) are three cloud computing online applications that will meet most students' image-editing needs and run on the Internet without being downloaded and installed. Beginners will enjoy the easy-to-use features of Picnik, while more advanced users can appreciate the more sophisticated features found in Splashup and Pixlr. Although each of these programs runs through the Internet without installing additional software, they do not technically meet the full definition of cloud computing for two reasons. First, only one person can retouch an image at a time. The programs lack the collaborative feature of cloud computing. Second, the images are stored on the user's computer, rather than on a remote server (although there are options to store and share the final image on the Internet). With these two drawbacks in mind, they are still useful programs that educators and parents will want to consider.

Picnik (which was recently acquired by Google) can be used without creating a login and password, although users will need one to create slide shows that can be shared on the Internet. Picnik also has a wide range of advanced features that are blocked on the free version. With little to no instruction, students should be able to access the program, upload a digital image from their computer, and apply

a variety of editing functions. The opening screen offers options to upload a photo for retouching, create collages, print an image, or create slide shows that can be posted on the Internet.

Once a photo is uploaded, it can easily be improved within the **Edit** tab (see Figure 2). Students can crop, improve the color, remove red eye, and sharpen their images. Students can save their retouched images back to their computer with the **Save & Share** tab. The **Create** tab contains a number of advanced features that are mostly restricted to the premium (\$24.95 per year) version. The **Library** tab permits students to upload up to five photos, provided they have established a login and password. The premium version permits more photos to be saved on the site. Students also can design and save collages (see Figure 3) of their photos. If students have a login and password, they can create automated slide presentations that can be posted to the Internet. The advantage of Picnik is that it is user-friendly and easy to use. Unfortunately, many of the interesting



Figure 3. Students can create a variety of collages of their favorite images with Picnik.

and advanced features are restricted to the premium version.

More advanced users are probably familiar with Adobe's Photoshop, which has been an industry standard for photo retouching. One key feature of Photoshop is the ability to create layers. With layers, parts of several images can be combined to create new images. For example, the background of one image can be erased and the image can then be placed on a different background. Splashup and Pixlr



Figure 4. The Tools, Layers, and History windows of Pixlr resemble those of Photoshop.



Figure 5. A variety of filters, including the vignette effect, are available with Pixlr.

have the layers option. Pixlr does not require a login or password and also includes many of the features users have come to expect from Adobe Photoshop. Students can create a new image from a blank screen using the drawing tools of Pixlr, open an image from their computer, or open an image from the Internet.

Once an image has been opened in Pixlr, a set of **Tools** appears to the left of the image and **History** and **Layers** windows appear to the right of the image (see Figure 4). These resemble the windows featured in Photoshop, and Photoshop users will feel right at home with this program.

Pixlr has tools to darken (burn), lighten (dodge), smudge, and stretch or squeeze certain areas of an image. It also features a variety of useful filters. For example, with a simple selection of the vignette filter, a vignette effect can be added to a photo (see Figure 5). Images can be saved to the user's computer or saved to the web for others to view. Pixlr creates a unique address for the shared photos. Users can share that address with others; however, anyone who has access to the address can delete the image.

Dropbox

Cloud computing may be multiple people collaborating on documents in real time across the Internet, such as Google Docs, Zoho, and Windows Live Office. It may be a web-based software program that eliminates the need to install the software on the user's computer, such as in Picnik, Splashup, and Pixlr. Or, it may be simply storing documents in the clouds, on remote computers connected to the Internet.

Nothing is more frustrating than having to transfer files between a computer at work or school and one

at home. Cloud computing can easily eliminate this frustration; <http://www.dropbox.com> provides an elegant solution to this problem. Dropbox is a program that users install on each of their computers. The program creates a folder on each computer called My Dropbox. Any file that is saved to or copied to that folder will automatically appear on each of the user's computers that has Dropbox installed. For example, I began this article on my office computer. I saved the file in My Dropbox folder on my office computer. Over the weekend, I opened the the My Dropbox folder on my laptop and continued working on this manuscript. I saved my work on the laptop in the My Dropbox folder and, on Monday when I returned to the office, opened that latest version of the file on my office computer and continued to work on the document.

Dropbox eliminates the need to move files from one computer to another. The Dropbox software links all of a user's computers together via a single folder. It also allows users to share folders with colleagues on other computers. Transferring data between computers traditionally requires uploading via web forms, connecting to network drives, carrying around thumb drives, or sending e-mails with attachments to others and oneself. Dropbox makes all of these methods obsolete. The service is free for storage up to 2 GB. The company charges a monthly fee if users wish to store more.

Dropbox uses the Internet to synchronize the content on the users' computers. The actual files are saved on each of the computers in the My Dropbox folder, so users do not need to be connected to the Internet to access their files. They can open, edit, and save files without Internet access. Once the computer is connected to the

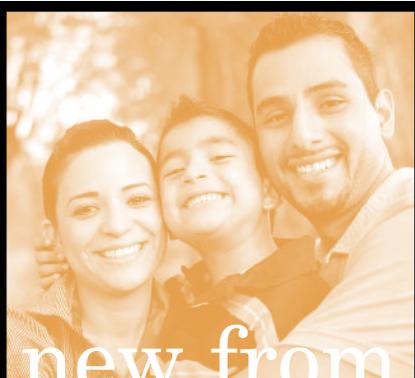
Internet, it automatically uploads the updated or new file for download to the user's other computers. Users also can access their files from any computer connected to the Internet by visiting the Dropbox website.

In Summary

The world of cloud computing is changing daily. Companies that exist at the writing of this column may be acquired by others by the time this piece is printed, and new companies will have surfaced. The only certainty is that cloud computing has made its mark and will continue to become more popular. Laptop manufacturers have taken notice and a variety of Netbooks for under \$300 are now available. Programs running on the Internet cloud do not require extensive memory or storage capacity on the computer using them; thus, manufacturers have been able to cut laptop costs by building them with slower processors, less memory, and less storage. These new Netbooks bring educators closer to the day when each student will have a computer and the Internet at his or her fingertips. Educators need to embrace this trend in technology as they develop students' talents and expand their students' understanding of a world that lies in wait at their fingertips. **GCT**

Reference

Chan, S. P. (2010, May 8). Big leap: Microsoft makes free version of Office, its cash cow. *The Seattle Times*. Retrieved from http://seattletimes.nwsources.com/html/business/technology/2011818423_microsoftoffice09.html?prmid=related_stories_section



new from
**prufrock
press**

When parents need the most authoritative information on raising gifted kids, they can turn to *Parenting Gifted Children: The Authoritative Guide From the National Association for Gifted Children*. This comprehensive guide covers topics such as working with high achievers and young gifted children, acceleration, advocating for talented students, serving as role models and mentors for gifted kids, homeschooling, underachievement, twice-exceptional students, and postsecondary opportunities. The only book of its kind, this guidebook will allow parents to find the support and resources they need to help their children find success in school and beyond.

<i>Parenting Gifted Children: The Authoritative Guide from the National Association for Gifted Children</i>	978-1-59363-430-8 \$21.95 US/ \$25.95 CAN 592 pages 6" x 9"
---	---

 To order, please visit our website at <http://www.prufrock.com> or call 800.998.2208