Emerging technologies likely to impact teaching, learning, research: A review of The 2009 Horizon Project findings.

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The New Media Consortium's Horizon Report provides a view of the emerging technologies that are likely to impact the educational world globally. Let's ring in 2010 by considering some ways in which these new technologies may change the face of education over the next five years.

Let's consider four technologies that rose from the pack as the most likely to impact education in the next three years.

Collaborative Environments

What are collaborative environments?

Online tools that support collaboration are being utilized by teachers who value these experiences with their students.

What are some examples of collaborative environments in use?

One example of this is Google Docs (http://docs.google.com). It is an environment in which multiple people can work at once on the same product. We can open a document or spreadsheet and as a team edit it from our home computers in different locations. Another increasingly popular web site Moodle (http://www.moodle.org) which allows teachers to create web spaces for their classes to share in and get access to multimedia information related to the class. Students can also communicate in the space in real time (synchronously) or through bulletin board applications where they post their thoughts (asynchronously). When you add a 3D world to this type of collaboration you get a web site like Second Life (http://www.secondlife.com) where you become a virtual character or avatar. They do much of the same collaborating described in the earlier application through an interesting and immersive interface.

How might they impact educational institutions?

These online spaces have the potential to allow students to collaborate and extend their learning beyond the physical and temporal limitations of a typical school experience. It also has them working on skills that are increasingly valued in the 21st Century work force. These tools also encourage global collaboration by allowing web based access to the collaborative space in which the learning is taking place. One can imagine a team of students starting work on a collaborative project continuing their editing later that evening from their desktop or handheld devices. This would probably happen while the students were IMing the entire time in order to keep a real time chat going. (I see this kind of problem solving often as my son plays any of his Xbox 360 multi-user games!) My students also utilize a blog that they produce to help solicit ideas and teach the world about the plight of northern diamondback terrapins. (See http://terrapinkids.blogspot.com

Online Communication Tools

This set of tools is second nature to most American teens. Instant messaging, online video conferencing, and other forms of social media are a regular part of our students experience. The report suggests that these technologies are inexpensive and have the ability to remove the barriers of space and time imposed by most learning environments.

What are some examples of online communication tools in use?

Twitter (http://www.twitter.com), a program where one updates followers on their ever changing status through text or visuals is one of the most popular current programs. (The NBA has recently banned "tweeting" 90 minutes before and after games.) Skype, (http://www.skype.com) which offers free on-line video conferencing is also very popular and easy to use.

How might they impact educational institutions?

These tools certainly open up a world of interesting project ideas. Students can publish their ideas and share them with the world. They can also get access to ideas from students and experts wherever they may be. In one recent Skype session my own middle school science students chatted with a colleague of mine who was conducting ice core climate research in the Arctic. I could see many opportunities for students to use these instant updates to enhance curricular experiences. One event that this woudl work well with is our upcoming Bio-Blitz in which students will be locating as many different species as possible on our school campus. Imagine a twitter feed that you could follow that would update you on the progress of the day and the growing species count!

Mobiles

We know that cell phones are ubiquitous. They are also no longer just phones but powerful handheld computers with some impressive capabilities. The report suggests that the GPS

functionality, along with the many other applications that run on them, have the potential to impact learning.

What are some examples of mobiles in use?

The ability to take and store photos and videos on phones in increasing quality is making them useful media tools. High speed 3G networks and wi-fi capability make them easy to use for sharing this data via e-mail or directly to a web or facebook page. The increasing number or applications (or apps) that are being created for phones are making them truly indispensable. The GPS capability, the news gathering and web browsing functionality make them tiny powerful PCs.

How might they impact educational institutions?

In field work students can use their phones to gather images and data. The iPhone stamps every image with it's longitude and latitude data which makes it particularly interesting in combination with a program like Google Earth. Their imbedded graphing calculators can be useful in math and science. The ability to Google content and utilize other content specific web sites will also be powerful. The ability to take a picture and immediately upload it to a web page or storage area on line could make the production of real time publications exciting.

Cloud Computing

The "cloud" in "cloud computing" refers to the internet. The most common application of cloud computing is the delivery of an application (or program) via the internet and accessed by a web browser. The program running the application and any data generated by the user is located on servers that are not on your local machine. It is really just a form of distributed computing.

What are some examples of cloud computing in use?

Flickr (http://www.flickr.com) for storing and viewing photos , YouTube (http://www.youtube.com) for uploading and viewing videos and Blogger (http://www.blogger.com) for hosting blogs, are three popular examples of productivity applications that operate in a cloud.

How might they impact educational institutions?

It changes the way we think about computing. We no longer need to purchase expensive software that is locally installed to provide our students with some powerful experiences. Email, word processing, spreadsheets, presentations and more can be accessed in this way. It is also much easier to share the content when it is web based which opens up opportunities to collaborate. However, what makes this powerful and useful is also it's downside. The data is not

generally located locally and requires trust on the part of the user that the data will be safe and not abused.

Five top trends that The Horizon Report reported in their research were:
1) Technology continues to profoundly affect the way we work, collaborate, communicate, and succeed.
2) Technology is increasingly a means for empowering students, a method for communication and socializing, and a ubiquitous, transparent part of their lives.
3) The web is an increasingly personal experience.
4) The way we think of learning environments is changing.
5) The perceived value of innovation and creativity is increasing.

While each of these opportunities present challenges to be overcome, it is clear that the Horizon report has a finger on the pulse of the cutting edge technologies that are most likely to impact our schools. It is well worth reading.

For a more detailed view of the report and MANY more examples of each of these technology categories in action please click on the following link. http://www.nmc.org/pdf/2009-Horizon-Report-K12.pdf

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