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Monday, April 20, 2009

## Six technologies soon to affect education

Thu, Mar 26, 2009

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Six technologies soon to affect education

New report describes the emerging technologies that will shape K-12 education in the near future

By Meris Stansbury, Associate Editor

Primary Topic Channel: [Research](#)

Collaborative environments, cloud computing, and "smart" objects are among the technologies that a group of experts believes will have a profound impact on K-12 education within the next five years or sooner.

The group, called the New Media Consortium (NMC), has come out with an annual report on emerging technologies in higher education for the last several years. This year, for the first time, NMC has issued a K-12 version of its "Horizon Report" as well.

*The Horizon Report: 2009 K-12 Edition*, released earlier this month, identifies and describes six emerging technologies that will have a huge impact on K-12 education within the next one to five years.

The report groups these technologies according to their time-to-adoption horizon--one year or less, two to three years, or four to five years. It also outlines key trends and challenges associated with their adoption.

Made possible through a grant from Microsoft Corp., the report draws on published resources, current research and practices, and expertise from an advisory board of experts in education and technology. Members include representatives from the Consortium for School Networking (CoSN), technology vendors, EDUCAUSE, and U.S. school districts and universities.

"This is the first report we have developed with a focus on emerging technologies for elementary and secondary schools, and we hope that K-12 educators will use it as a resource for robust dialog and technology planning," said Larry Johnson, NMC's chief executive. "The technologies we identified have the power to transform teaching and learning both in the short and long term."

The six technologies detailed in the report are...

- One year or less: collaborative environments and online communication tools
- Two to three years: mobile devices and cloud computing
- Four to five years: smart objects and the personal web

### Collaborative environments

The report defines this as anything from simple web-based tools for collaborative work to multiplayer gaming environments, and from social-networking platforms to virtual worlds.

Examples of the tools used to create these environments include [Voicethread](#), which allows users to collect multiple voices and viewpoints in a single package, and [Ning](#), which lets teachers set up workspaces that include web feeds to pull in relevant resources, chat spaces (synchronous or asynchronous), forums, profiles, shared documents, calendars, music, and many other tools--all with a few clicks.

The benefit of using these tools, the report states, is to foster teamwork and critical thinking skills. The challenge is for educators to be able to assess these types of skills in real time.

### **Online communication tools**

According to the report, these tools make it easy for students to move past the classroom walls and connect with their peers around the world, as well as with experts in the fields they are studying. Access to these tools gives students an opportunity to experience learning in multiple ways, develop a public voice, and compare their own ideas with those of their peers.

Tools mentioned in the report include Twitter, Skype, and [Edmodo](#), a private micro-blogging platform that gives teachers and students a sheltered place to manage classroom assignments and activities as well as engage in protected conversations.

### **Mobile devices**

Over the past few years, the report notes, smart phones and other mobile devices have become able to record audio and video, store more information, and access the web--making mobiles function like laptops.

"The combination of available applications and a device that [students] can carry provides an opportunity to introduce students to tools for study and time management that will help them later in life," says the report. "The implications for K-12 education are dramatic: the potential for mobile gaming and simulation, research aids, field work, and tools for learning of all kinds is there, awaiting development."

### **Cloud computing**

This is a term for networked computers that distribute processing power and applications among many machines. Applications such as [Flickr](#), Google Docs, and YouTube use a cloud as their platform, just as programs on a desktop computer use that single computer as a platform.

According to the report, cloud-based applications can provide students and teachers with free or low-cost alternatives to expensive, proprietary productivity tools. eMail, word processing, spreadsheets, presentations, collaboration, media editing, and more can be done from a web browser, while the software and files reside in the cloud.

### **Smart objects**

A smart object, as defined by the report, is "any physical object that includes a unique identifier that can track information about the object." The object can connect the physical world with the world of information. Smart objects can be used to manage physical things digitally, track them throughout their lifespan, and annotate them with descriptions, opinions, instructions, warranties, tutorials, photographs, and so on.

School libraries, for example, can use smart objects for tracking their collections and checking materials in and out. According to the report, some libraries are investigating further applications for smart objects: A project called [ThinkeringSpaces](#), from the Illinois Institute of Technology's Institute of Design, "combines physical and virtual components to produce an environment where physical objects, like books, can be annotated with contextual information that is added manually or retrieved automatically."

Smart objects have recently become cheap for students and teachers to create, using Quick Response (QR) tags and smart-code stickers. Web services such as [Shotcode](#) and [Kaywa](#) let anyone encode QR tags and print them out. Products like [Tikitag](#) and [Violet's Mir:ror](#) allow users to attach scannable stickers to household objects.

### **The personal web**

This is a term to describe a collection of technologies "that confer the ability to recognize, configure, and manage online content, rather than just viewing it," the report says. Personal-web technologies give users the ability to sort, display, and even build upon web content according to their personal needs and interests.

According to the report, simple tools to create customized, web-based environments to support social and academic activities are easily available today, but their use in schools is severely hampered by access and filtering policies.

Along with a more fully developed discussion of the relevance of each technology to education, the report also gives examples of how the technology is being--or could be--applied in education. And it notes that two themes arose repeatedly during discussions of these technologies: assessment and filtering.

"Assessment continues to present a challenge to educators at all levels, particularly in the context of new media and collaborative work; evaluating student work that includes blogs, podcasts, and videos, or establishing how much an individual student contributed to or learned from a collaborative project, is difficult," the report explains. "Further, translating assessments of this nature into the metrics measured by standardized tests is not at all straightforward."

Continued the report: "Likewise, the practice of filtering is intimately related to each of these topics. At many schools today, the technologies named here cannot be used because they are blocked by content filters. The advisory board recognized the need for new [filtering tools] that do a better job of keeping objectionable content out of the way, while allowing useful tools and content to be accessed."

Other challenges to the adoption of these technologies in schools include the fundamental structure of the K-12 establishment, which is slow to adapt to new trends.

The full report is available on the NMC web site. The CoSN web site also features an online forum dedicated to an ongoing discussion about the report.

"For education leaders, this report is extremely valuable and critical to making sure that school districts are integrating technological tools that will have maximum impact," said Karen Greenwood Henke, CoSN board liaison. "Having a grasp on up-and-coming technologies empowers technology leaders to plan for the future and keep their students, educators, and administrators on the cutting edge."

#### **Links:**

[Horizon K-12 Report](#)

[New Media Consortium](#)

[Consortium for School Networking](#)

*Note to readers:*

*Don't forget to visit the **Empowering Education Through Technology** resource center. Integrating technology into the classroom can be a challenge without the right guidance. Go to: [Empowering Education Through Technology](#)*

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