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Syncing Up with the iKid: Connecting to the Twenty-First-Century Student

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Credit: David Julian

Nathaniel Hawthorne's novels are pretty daunting fodder for the average English class, no matter how they're approached. But Diane Hamstra, a teacher at Park Tudor School, in Indianapolis, found a way to get her tenth-grade students to dive enthusiastically into the nineteenth-century moralist's dark thicket of language.

Hamstra used a software application called DyKnow Vision [1] to let her students analyze various passages from the books on computer screens at their desk. She then posted their work on a large-screen monitor at the front of the classroom (the computer lab, in this case), and the students discussed the displayed examples. Hamstra has also had students analyze similar passages using pen and paper.

The difference is startling. Using the software, the students' responses "were deeper than with pen and ink," Hamstra says. "The focus was really sharp. There's something about changing over to an electronic medium, something about that screen. It's psychological. It's a generational thing."

No kidding. Teachers in every strata of education are increasingly dealing with a student population that is not only more wired than they are but also grew up in a techno-drenched atmosphere that has trained them to absorb and process information in fundamentally different ways. This generation of students is

more likely to be armed with cell phones, laptops, and iPods than with spiral notebooks and No. 2 pencils.

Teachers who once struggled for students' attention mainly against daydreams, passed notes, class clowns, and cross-aisle flirting now also face a formidable array of gadgets and digitized content. Smart schools -- and smart educators -- are scrambling to figure out how to use these same tools and information-distribution techniques to reach and excite young minds. "You have to work with the kind of brains we've got now," says Susan Blackmore, who holds a PhD in psychology from Oxford University and frequently writes and lectures on new technology's effects on consciousness.

According to Blackmore, today's brains are shaped by various information streams -- sometimes referred to as memes -- constantly popping and sparking and competing for attention. This new generation of digital learners -- call them the MEdia Generation -- take in the world via the filter of computing devices: the cellular phones, handheld gaming devices, PDAs, and laptops they take everywhere, plus the computers, TVs, and game consoles at home. A survey [2] by the Henry J. Kaiser Family Foundation found that young people (ages 8-18) mainline electronic media for more than six hours a day, on average. Interestingly, many are multitasking -- listening to music while surfing the Web or instant-messaging friends while playing a video game.

Educators must figure out how to compete with this frenetic memestorm coming at them from marketers and other students. Many are. The last few years have seen a rapid classwide and districtwide use of collaborative course-management systems such as DyKnow as well as so-called social technologies -- blogs, wikis, and media-syndication systems based on the Really Simple Syndication [3] (RSS) protocol -- that allow anyone to shift from consuming media to being a media creator. Giving students powerful media-authoring tools means relinquishing a degree of control, but doing so also makes it possible to help them learn in more effective ways (and tighter time frames) than ever before.

One way of competing with electronic distractions is to optimize lessons for the MEdia Generation's rapid-fire meme-hopping tendencies. Leapfrog Enterprises, maker of the LeapPad Learning System [4], the talking-book device that topped the list of best-selling toys in the United States for several years, imposes a seven-second rule on the writers and designers of its teaching toys: Stories and lessons must progress in increments of seven seconds or less, at the end of which the book prompts the child to interact with it. A concession to a fragmented attention span, perhaps, but one that recognizes reality.

Collaborative learning, too, has taken a tech-driven leap forward. In the Cranbrook Schools, in Cranbook, Michigan, for instance, students use Moodle [5], an open source course-management system designed to create online communities. With it, users discuss class content with teachers and other students, take quizzes and tests, and get help after school.

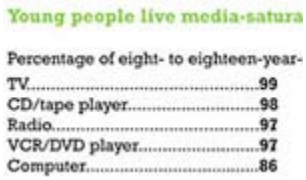
Class Action

Although tech awareness in the schools has increased, in many instances it does not focus on the classroom. A recent survey by CDW Corporation [6] shows that teachers are more likely to use technology to ease the administrative requirements of K-12 education than to utilize it in instructional applications. More than 85 percent of respondents in CDW's Teachers Talk Tech survey say that while they are adequately trained on Internet, word processing, and email software, 27 percent have little or no training with integrating computers into lessons. Nonetheless, the survey indicates that more than 70 percent of teachers at all grade levels believe computers are an important driver of student learning.

Christopher Moersch, an independent Internet-technology consultant who helps schools incorporate tech

into the class, says most teachers he encounters are eager to engage their students with classroom technology, but federal testing requirements consistently get priority over technology initiatives. Consequently, teachers spend most of the day in drill-and-practice mode, preparing for standardized tests.

"The typical kid's reaction is, 'I'm bored to tears,'" says Moersch. "'There's a total disconnect between my life and what's going on in the classroom.'" But if that changes, the effect on learning could be immediate and widespread. More than half the students in a nationwide survey by the National Governors' Association [7] said their classwork is easy, and two-thirds reported they would work harder if their coursework were more interesting or challenging.



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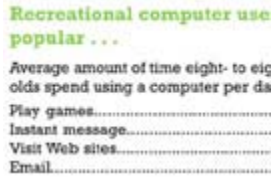
Credit: Henry J. Kaiser Family Foundation study, March 2005



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To some degree, our gizmo-intensive state of affairs is Alan Kay's fault. Kay earned the sobriquet "father of the personal computer" for his work at Xerox PARC (Palo Alto Research Center) in the 1970s, where he came up with the concepts of the personal computer and the graphical user interface. But originally, Kay wasn't trying to create a better tool for business. He was thinking more along the lines of a teaching machine. In 1968, Kay, a computer science graduate student at the University of Utah, heard that Seymour Papert, an artificial intelligence researcher at the Massachusetts Institute of Technology, was doing interesting work with computers and kids, and he visited Papert in Cambridge to check it out.

Papert, working with pioneering educational psychologist Jean Piaget, came up with a programming language called Logo [9], simple enough for kids to use to do math, generate poems, and even translate sentences into Pig Latin. The theory behind Logo was that children, by actually creating their own learning environment, would retain far more knowledge than they would from ordinary teaching methods. Kay came away from his visit with Papert with several new ideas, one of which led to object-oriented computing and another that prompted a device called KiddieKomp, later renamed the

Dynabook [10].

In a 1971 memo, Kay described his vision for the device, originally intended specifically for children to use as a learning machine: "In the 1990s, there will be millions of personal computers. They will be the size of notebooks today, have high-resolution, flat-screen displays, weigh less than 10 pounds. . . . Let's call them Dynabooks."

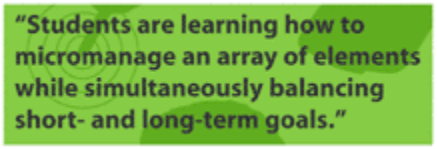
And so it came to pass, almost exactly as Kay predicted/invented it. Except for one thing: The problem, Kay told me in a recent email, is largely with "the difficulty of adults to adjust to new ideas. I don't mean really new ideas like computing, but ideas new to the human race, like science and how it uses mathematics, or even slightly older ideas like reading and writing. Teaching the latter is still a struggle, despite its relative antiquity (and despite the fact that we know very well how to do it best). And real mathematics and real science are not yet taught in elementary and even most high schools."

Turning of the Tide

The slack tide of educational innovation Kay laments is beginning to turn, as teachers deploy the latest wave of teaching technology. The kind of Dynabook Kay envisioned is still in the wish list stage, but the means to deliver the deeply educational Dynabook experience Kay had hoped for are all around us: laptops, handheld computers, powerful cell phones, the same inescapable computing devices frequently bemoaned as weapons of mass distraction.

Together, blogs, wikis, and other social technologies are seen as a new entity [11] that goes by many titles -- the semantic Web, Web 2.0, the read-write Web -- but whatever you call it, this swirl of media may well end up doing Kay's vision one better.

Pamela, a student at North Whiteville Academy, an alternative school in North Whiteville, North Carolina, writes on her page of teacher John Blake's class wiki, "Students are learning how to micromanage an array of elements while simultaneously balancing short- and long-term goals." Pamela's observation, incidentally, is at the heart of the defense of video games advanced recently in Steven Johnson's controversial book *Everything Bad Is Good For You*.



"Kids are bombarded by media," says Blake. "They're completely high tech, and they don't know a different way. When you hand them a book, they're going to say, 'Is this all there is?'"

Looking for more structure and access control than the wiki system gave him, Blake switched over to Moodle software this fall to manage class-related conversations, homework assignments, and quizzes. He also encourages students to keep blogs using BlogMeister [12], a student/teacher system created by the Landmark Project [13]. To tie it all together, Blake's classes use Bloglines [14], a Web-based tool that aggregates RSS feeds generated by Moodle and BlogMeister so all the school-related activity and conversation can be viewed in one place.

"This is a mix-and-match generation," Blake says. "I'm looking at these things as a way to hook into what they're doing outside the classroom. When they see that I know how to use the technology, they think, 'This is going to be cool.'"

At Martin Luther King Elementary School, in Atlantic City, New Jersey, fifth- and sixth-grade classes made short documentaries about local history, architecture, and celebrities and post them to the school's video blog, Atlantic City Rough Cuts. "We're using video blogging to put students in contact with real professionals," Art Wolinsky, the consultant and retired teacher who helped set up the Atlantic City project, said at the time. "They're-creating products that are going to have an impact on them, on their friends, and on the community."

Older kids, even those getting ready for college, benefit from new applications of technology. High schoolers can tap into Boston Test Prep's BTP to Go [15], an audible SAT test-preparation course downloadable onto digital audio players such as iPods, as well as PDAs, smart phones, and other listening devices. The audio format allows students the freedom to prepare for the SAT at their own pace and within their crazy schedules. Such personalized instruction can also alleviate much of the stress caused by an SAT prep course held in a traditional classroom setting.

Shifting Power Centers

Of course, there's a price educators pay when they open their classes up to the world: Power tends to move from the center outward, an exact duplication of the effect of the Internet on many institutions. In March, the principal of Proctor High School, in Rutland, Vermont, banned access from school computers to MySpace [16], a blogging site popular with students, saying blogging isn't an "educational use of computers" and citing concerns about Internet predators.

Just as in corporate America, where companies such as Delta Airlines, Microsoft, and even Google have fired employees over blog posts, schools are working on policies designed to protect themselves while trying not to stifle personal expression. For educators accustomed to making and enforcing absolute rules, letting the inmates take part in running the asylum (an inexact metaphor, of course) is going to take some getting used to. But in the end, the best way for students to learn about the world they live in is to have a hand in creating it.

"The key to teaching is keeping kids involved," says Ryan Ritz, the computer science teacher who first brought the DyKnow system to the Park Tudor School. "They like everything being electronic -- it's speaking their language." Ritz cites near-instant feedback during class as the most important feature of the system, allowing him to know which points the students have observed and which ones need to be revisited." You know immediately where they stand," he says. "This is a better way to learn."

Josh McHugh is a contributing writer for *Wired* magazine.

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