

YOUNG AND WIRED

Computers, cell phones, video games, blogs, text message—how will the sheer amount of time spent plugged in affect our kids?

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One winter Friday just as the sun was going down, Nathan Yan settled at the computer table in his parents' Daly City living room and began what he calls "my rounds." That includes checking his e-mail, friends' blogs, his Wikipedia watch list and scanning for news about "Lost." If he has time, he might post a blog, peruse his spreadsheet of baseball statistics or cyber window shop, watching the price of camera equipment he can't afford drop almost daily. He also listens to music, using headphones so he won't bother his parents or younger brother, who often sits at an adjacent computer, also wearing headphones, ensconced in a game.

This evening, though, Nathan, a senior at a public high school, forgoes the music so we can talk about what is directly in front of him -- a somewhat large, bulky computer that is without the latest technological accoutrements and relies on dial-up Internet access, but is nonetheless the focus of Nathan's teenage existence. He estimates he spends five to six hours a day on the computer, including doing his homework -- often concurrently with other activities. But even when he's working on "non-computing activities," he's usually in front of his computer. Tonight he'll probably be on until about midnight.

"I'm pretty much on the computer 24/7, when one is available," he e-mailed me before we met. "I take the usual breaks, for sleep and school and other such necessities (and I don't believe that computer use really encroaches or takes away from those activities), but otherwise I'm most always on the computer."

If the amount of time Nathan spends on the computer seems unusual, it's not. It puts him directly in sync with other kids his age. Young people reported spending about 6 1/2 hours per day occupied with various media, according to a survey released last year by the Kaiser Family Foundation. That's about an hour a day more than they were plugged in five years ago, with most of the increase coming from video games and computer use. And about a quarter of kids said they did more than one media activity at a time -- listening to music, watching TV, instant messaging, Internet surfing, playing games, you name it -- with this multitasking adding up to the equivalent of 8 1/2 hours a day of media exposure.

Nathan says, half-seriously, he would "probably consider myself one of those so-called computer addicts," but is quick to add that he's grown up with computers and they make his life easier. He does research and homework with classmates online. And he can be in touch with friends who don't live in his neighborhood, where there's nowhere safe for teens to go at night, he said. That's when much of life seems to unfold on the computer.

But his mother, like parents across the country, worries about the long-term effects of the amount of time her sons spend wired to various media. She says she reminds them of the potential for short-term harm -- bad posture, aching muscles, back problems. What concerns her most, she says, is that she just doesn't know whether so much computer use is good for them in other ways.



"I don't really know what they're doing," May Yan said of her two sons.

Two large studies last year -- by the Kaiser Family Foundation and the Pew Internet & American Life Project -- have documented how much time kids are spending online and plugged in to electronics. More than 85 percent of 8- to 18-year-olds in the survey had computers at home, up from 73 percent in 1999. Two thirds had TVs in their rooms and about half had video game players there. Almost three quarters had Internet access at home. According to the Pew study, about half of teen Internet users went online daily, about the same percentage that said the Internet helped their social lives.

But 62 percent of the parents surveyed did not agree. Somewhat surprisingly, however, only 23 percent of the teens in the Kaiser survey said their parents restricted the amount of time they spent on the computer.

As parents become increasingly concerned, some scientists and psychologists are sounding alerts about the effects of so much wired time, much of it spent multitasking. Aside from the more visible consequences of so much screen time -- lots of children who don't get enough exercise and higher obesity rates -- they believe there may be troubling developmental, learning and social ramifications. Meanwhile, skeptics say all this concern is part of a historical pattern, one generation that looks on the next as being corrupted by something new. Didn't it happen with radio, rock 'n' roll, comic books and television? Is it possible that the Baby Boomers -- who've turned the microscope on every aspect of their children's lives -- are just doing what their parents did now that their kids are teens? It's not an easy question to answer.

"One generation ago parents were worried that kids were on the phone or watching TV," said David Walsh, a psychologist who founded the Minneapolis-based National Institute on Media and the Family. "Now it's that they're always wired. The concern is not that there is anything harmful in kids instant messaging and being in MySpace in and of itself. The worry is what is dropping off their list."

A week after we talked on the phone Walsh spoke at a conference on teenage behavior held at Campolindo High School in Moraga. At one point he projected a slide with a single word in large letters -- "revolution." "We are in the early stages of a revolution," he said. "It's a changing world in which we live and in which our kids' brains are being wired."

His daughter, Erin, who grew up on the edge of the revolution and now works with the Institute, agrees. "Adults talk about media as 'good or bad,'" she said, in a talk after her father's. "But I realized that people my age weren't talking about it. We're in the middle of it. It's happening so fast, it's so new, we don't have any name for it."

Technological products are changing so fast that you could blink and miss them, she said. Home video game systems that were new in 1999, for example, are "ancient history," far surpassed by the greater screen resolution and higher speed of new ones. "An 8-year-old today," she said, "in 40 years will see a product on TV and be able to click on it and order it."

Many parents at the conference voiced the same concern as Nathan's mother. They had questions about the content of the Internet -- among them the now widely publicized dangers of meeting strangers online and being exposed to pornography -- but there now was an overarching question: What about the sheer amount of time their kids were plugged in?

One father said he was so frustrated that he pulled the plug out of the wall when his 12-year-old son refused to get off after hours of game playing. "I could see steam coming out of his head," he said. "I was worried he'd try to fight me." The father didn't want to be identified by name or the community he lived in because he worried "people would say, 'How could you let your kid play on the computer for 12 hours?'"

Yet his dilemma was not uncommon. Jane Berkowitz of Danville said her 16-year-old got so engrossed so quickly in a game called War of the Worlds that soon after getting it he was playing 10 hours a day.

"If nothing else was going on I let him," she said. But then his grades slumped. Usually an A student, he received two D's on a midterm report card. "I'm sure it has to do with the game," she

said. "It concerns me how much time he spends in front of the screen. Too many kids, good kids, are experiencing life in front of the screen. Life is taking place without them."

So, recently, Berkowitz began demanding her son turn off the computer and spend time with her. "Tomorrow he and I will have breakfast or lunch together and we'll talk," she said. "I know if I don't fight for him, he's not going to develop his social skills to the fullest."

Mei Yan, Nathan's mother, sometimes pulls up a chair next to her younger son so she can watch what he's doing, she said. It usually prompts him to get off. But when she was at work and phoned her sons to get off the computers after two hours -- what Nathan used to call "cell control" -- they didn't.

She and her husband, an engineer, put the computers in the living room so they could monitor use more easily. The computer is so much a part of her sons' lives that they sometimes bring a laptop when they visit family in the East Bay, "so they don't get bored," she said. At times she and her daughter, the middle child who likes her cell phone but is less tied to the Internet than her brothers, go shopping and leave the boys at home with their computers.

It's not that Nathan is having any trouble at school. In fact, he excels. He takes five Advanced Placement classes, writes for the school paper, takes part in the debate team and model UN and, away from school, composes articulate, philosophical blogs about daily life and love. But still she's uneasy that he always uses "one tool, the computer," for hours at a time. Her own work, at the front desk of a physical therapy center, requires her to use a computer that still relies on floppy disks, nothing like the world her kids now comfortably inhabit.

In the past decade, several centers devoted to computer or Internet addiction among adults have opened around the country. Some of them, ironically, offer treatment or referrals over the Internet. There are Web sites that deal exclusively with obsessive gaming -- including one for "widows" of gamers and one founded by a Pennsylvania woman who said her 20-year-old son shot himself to death in front of his computer after becoming addicted to the game EverQuest -- or with out-of-control use of online pornography. One posts a self test for computer addiction, which some critics say would describe most of the population. If computer addiction -- which most psychologists agree masks underlying conditions such as depression, anxiety or another psychological disorder, the same as other addictions -- is hard to define in adults, it's equally difficult to do so in kids. If young people are spending 40 hours a week plugged into various kinds of electronics, what's excessive? Parents have a hard time determining.

Most kids in the Kaiser Family Foundation survey described themselves as happy, well-adjusted and involved in social activities and sports, but those who reported being the least content spent more time than their happier counterparts using various media.

"You see teens who are more moody or aggressive or agitated," says Michael Simon, a therapist in Oakland, who has treated kids for computer addiction. "The standard joke is what is the difference between signs of depression and adolescence? Often there is very little. How can you tell? Increasingly, clinicians are going to have to understand how (computer addiction) happens." Simon says he looks for underlying problems. If children can't identify and manage their own feelings, he said, they will find ways that help change their moods -- drugs, drinking, having sex, playing computer games.

"Zoning out on the computer is an easy thing to do," he said. "Kids will say, 'I just intended to play for 20 minutes. I sat down at 2, then it was 8:30.' That's like a drug experience. You have alteration of time. You're not thinking about anything else except for the cognitive place this puts you in."

But just using a computer for hours doesn't on its own indicate an addiction, Simon and other therapists say. Teens like Nathan Yan use the term loosely, but most don't fit the criteria for addiction.

"Most of us parents come from a different world," said Robert Scott, a psychologist who has offered a workshop in San Francisco for parents called Screen Time Strategies, one of a number of such sessions that have popped up in the Bay Area in response to parents' concerns. "Spending a lot of time in front of a video game seems troublesome as compared to when they were children.

... But you have to look at the age of the child, what interaction there is, what other things the child is doing. When you add all the factors in, the child might be doing quite well." Simon said parents should be concerned if the computer seems to be replacing family and friends, if it's the main source of emotional life or is disrupting school work. Increased tolerance -- needing to play for longer periods of time to be satisfied -- also might signify trouble, as does increased anxiety or moodiness when away from the computer. Sometimes, Simon said, students themselves say they feel out of control. They may have back aches or eye strain and stop taking care of themselves physically.

He began seeing an increase in children with computer addiction in 2001, he said, so he sent an informal survey to parents asking about their concerns. Parents reported kids were more worried after the terrorist attacks of Sept. 11.

"I don't think it's an accident that there has been an increase in this sort of thing since 2001," he said. "People feel more stressed. Teens feel more stressed. The Internet is the '50s counterpart of the Cosmopolitan."

Various researchers have found that between 6 to 10 percent of Internet users are addicted, but there are no firm numbers. Still, said Hilarie Cash, co-founder of Internet/Computer Addiction Services in Washington, the "prevalence is pretty high and growing."

In a visit to a cyber cafe in Sunnyvale where kids meet to play games like Counter-Strike and Warcraft, some talked about the long hours spent at the computer. They said they knew kids who were addicted, but believed their own playing was under control. The cafe, EuphNET, is a warren of rooms illuminated by black light and lined with computer terminals. The gamers swigged from cans of Bawls, a highly caffeinated drink, and snacked on junk food as they played, mostly in groups. It was not much different from going to a movie with friends, they said. By 5 p.m., kids were waiting in line for a computer before prices went up from the after school special of \$2 an hour to the usual \$3.50. Matthew Cuerdon, who owns three EuphNET locations, said the majority of his customers are college age or older.

The youngest pair that night, grade schoolers, had cardboard tubes of Pringles and cans of soda by their side. Their parents could have checked on them any time. The cafe's security cameras double as nanny cams. Some kids say their parents call up a view of the cafe on their home computers and require them to look at the camera and wave.

"The kids who come in, we watch after them," said Cuerdon. "Do they spend too much time at the store? Those who do have problems at home they want to get away from. This is a haven, an environment to socialize with friends. They're always playing with someone else."

Thomas, an 18-year-old senior at Los Altos High School, said he plays Counter-Strike, a shooting game that can be played individually or in teams, every day after school and for most of the day on weekends when he can. "All the people at school tell me I'm addicted," he said, but he sees it as a hobby. He said his parents aren't happy that he plays so much, sometimes 10 hours at a stretch, but insisted that he's a "decent student."

"I'm a competitive person," he said. "I do online tournaments at a higher level."

On that particular Friday night he had no trouble defeating three high school sophomores in a scrimmage that lasted about an hour. It was no easy feat. The three had logged many hours in middle school, getting weeklong passes in the summer and participating in the occasional midnight to noon tournaments, during which they played nonstop except for bathroom and pizza breaks.

One of them, Leo, estimates he has about three hours of homework each weeknight, but manages to spend three hours Internet chatting, talking, gaming and TV watching. His computer, which gets cable TV, is in his room. He said time spent on the computer doesn't affect his school work and helps him stay connected with his friends.

"My parents say as long as I finish my homework it's OK to be on the computer," he said. "Most people do it. All my friends do it."

"Hey, what's our strat?" said his friend Kevin, manipulating his character, gun drawn, down what looked like a stone archway in pursuit of an attacker.

"Oh, Dude, that sucked," said Leo as his character got killed.

"They say 1 in 4 kids is addicted," said Steve, joining in on our conversation about gaming.

"Dude, get the bomb!" yelled Leo.

"Dude, I can't get the bomb. He'll cap me," answered Steve.

And the game was over. The three left the cafe after about an hour and a half, saying they had a party to attend. "In eighth grade I was pretty addicted," said Leo. Now, he said, he has other things to do.

"I think this generation of kids is guinea pigs," said Jane Healy, an educational psychologist and author of "Failure to Connect: How Computers Affect Our Children's Minds -- for Better and Worse." "If it doesn't turn out good for them, it's too bad. You won't be able to get it back." She believes that what's at risk is producing a crop of kids capable of "very quick but very shallow thinking."

Cash of Internet/Computer Addiction Services said she thinks that kids who spend excessive amounts of time plugged in will have certain very well-developed skills and others that are stunted. They will be good strategic, logical thinkers, she said, but may have trouble staying focused, dealing with frustration, emotions or setting goals that take a long time to reach. This is precisely the kind of thinking that bothers people like Marc Prensky, a learning game designer and writer -- most recently of "Don't Bother Me, Mom -- I'm Learning!" -- who popularized the terms "digital immigrants" and "digital natives." The immigrants, born before the computer revolution and likely to encompass a lot of concerned parents, are now focused on the negative side of the natives' new technology, he says, without realizing the benefits of activities like gaming. People who play a new generation of massively multiplayer online game -- or MMOG -- may gain confidence, leadership and decision-making skills by joining guilds that get together to perform tasks or quests, he said.

"What we want is for kids to associate learning with engagement," he said. "They do that with technology. A kid can sit and figure out a new camcorder, master it after a few hours, then show it to the parent and then get no credit. The thing kids are mostly told is to turn off the computer." Prensky acknowledges there is such a thing as excess but suspects there is some envy on the part of parents who watch kids having fun with cool technology and feel left behind. And he "doesn't buy the complaints about multitasking." Haven't people -- especially women -- always done this, he asks?

"The kids say they have to power down when they go to school," said Prensky. "Their lives are powered up and the adults want to stop this. They think maybe they can do it with research or something, but it's like stopping rock 'n' roll when we were kids."

Research does, however, show the shortcomings of trying to do more than one task at the same time, say scientists and psychologists. David Meyer, a mathematical psychologist and director of the Brain, Cognition and Action Laboratory at the University of Michigan, brought students into his lab and gave them multiple simple tasks to perform. His conclusion: They showed costs in performance, taking from 50 to 100 percent more time to complete tasks and making more errors when asked to do more than one at the same time.

"No one is immune," he said. "Your CEOs, your macho people who go around saying how wonderful they are at multitasking. They don't do as well on tasks. The brain is built in a certain way and you can't change that."

In fact, it's almost impossible to do two or more things at once, said Dr. Jordan Grafman, chief of the cognitive neuroscience section at the National Institute of Neurological Disorders and Stroke, part of the National Institutes of Health. Instead, people alternate between tasks. What the brain really does as we attempt to multitask is decide how to place the activities in some sort of order that has to do with their importance. The ability to do that is governed by the prefrontal cortex, the area right behind the forehead, which modulates "executive" functions -- how we order and structure sequences of activities.

With practice, Grafman said, people can become adept at some mental tasks that are combined with motor activities like walking or swinging a bat. But, in general, it's wellknown in scientific

literature, he said, that with multitasking "it's always going to be a trade-off between quantity versus quality." One well-known example is driving and talking on the cell phone. "Your performance declines," he said. "It's observable and quantifiable. Does it always lead to an accident? No. Translate that into kids at home. There isn't a lot of data on the ordinary daily life sorts of multitasking, but how much can you learn about any one thing if you're doing all those things at once?"

When people start multitasking at a young age, they may get better at it, he said. But it will cost them later. "I'd love to compete against someone who is doing that," he said. "They just won't have the knowledge base as someone who doesn't do it, whether it's competing for a date or a job. ... I'm concerned about this."

But that's not to say Grafman is anti-technology. "I love (it)," he said. "I even try to occasionally multitask." But in the long term, he said, all the multitasking will have unintended consequences on brain development.

"If you start doing this from the time you are 4 or 5 there are no doubt genes that will adapt," he said. "It's not a crisis, not like the sun blanking out. Over the long run, it could result in evolutionary change that wouldn't necessarily be good."

If there's anywhere you're likely to find kids who multitask and can talk about it, it's Harker, a private school in San Jose where many parents work for tech firms and pupils at the high school are required to have laptops, which they use for everything from making math calculations and practicing foreign language accents to communicating with students in other countries and taking notes. They all take a course on using the computer for research. Those who are interested can take computer science classes and many students are adept at programming by the time they graduate.

Sharon Her, a co-editor of the school paper, learned just how dependent she was on her technological tools one week in winter when she volunteered to go offline for a journalism project. She did her homework faster, she said, but she also got lonely and bored. Usually she chats online with three friends while she works and intermittently checks news sites. At one point she felt so out of touch she picked up a land line -- which was allowed -- to catch up with friends. "I felt cut off," she said. "A lot of stuff happens through the Internet. If you go to school the next day you feel like you've missed something. People are doing things, getting in fights, so much happens."

In a conversation around a table at lunchtime, most kids said they take for granted doing many activities at once on the computer. They know it takes longer to do homework when they're listening to music, chatting and checking out MySpace. "I feel like at least I had fun," said one. The technology that surrounds their lives is both "a blessing and a curse," said another. A few said they'd started businesses online -- selling sneakers or computer components. Many couldn't remember the first time they logged onto a computer. There had always been one around, often with a parent attached to it.

"Mom always has her Blackberry, cell phone and laptop on at once," said Caitlin Contag. "We're accused of multitasking, but that's what we've evolved to, since the dawn of time. I admire her abilities. I see myself the same way, too, but it bothers me a little when we're supposed to be having family time and my parents accuse me of using a cell phone."

Sophomore Ben Englert started tinkering with computers in grade school and had his own eBay account at 12 so he could buy and sell components. In middle school he also spent a lot of time gaming, he said. His mother, a programmer, installed a program that kicked him off at a certain time, but it didn't take long for him to figure out how to kill it. He put the trick on his Web site to share with other students. His mother switched to another product, but he found his way around that one too. She gave up and he continued gaming.

But by ninth grade, with escalating homework and interests, Ben gave up the gaming on his own, he said. He also stopped trying to multitask -- a decision he made on his own. "My brain can't handle talking to a lot of people and doing my homework," he said.

At home, he's built a media center, a box that manages all his digital inventory of songs and information, and a powerful computer in his garage that contains four hard drives, some found in dumpsters.

During a visit to his home, he pointed out Spark, a robot he's borrowed from the school and is trying to program to walk a straight line, which is more complicated than he'd imagined. His mother Susanne said she used to be "a little worried" about the time he spent plugged in and still wishes he'd get more exercise. But now she sees how his interest in computers has become a creative outlet. He currently has six computers that he's worked on at home. His school laptop sits on his desk, dwarfed by a bigger monitor that he uses to view everything from video clips to the screen of his grandmother's computer, which he can troubleshoot from his room. When he's not at school or rehearsing for a school musical, he spends some of his time writing software programs -- including one for registering school computers and another for student laptops that shows how much time is remaining in class.

Kids at Harker said their teachers either embraced the reach of technology at school or were wary of it. Some actually want assignments printed out and handed in. Teachers rarely reprimand kids in class, they said, although there are always renegades who watch movies with subtitles or play NBA Live on their laptops while they pretend to take notes.

"This is the world they're going to live in," said Dan Hudkins, director of instructional technology at Harker. "If they don't learn to manage it they'll be lost. ... Kids can become obsessed with technology tools like they used to be with comic books and Dungeons and Dragons."

Parents sometimes surrender control in the technology realm because they just don't know exactly what their kids are doing, he said. It's one thing to look outside and see your kid playing basketball and another to see a child hunched over the computer, engrossed in something.

"It's not so much a technology question, but a parenting question," said history teacher John Near. "It's harder to monitor. If I had a magic wand, it would be to get parents to parent."

Chris Nikoloff, the head of the school, said this year he warned parents to be aware of electronic over-stimulation. Even though the school relies on computers, it's something he's been thinking about.

"It's something in my gut I think needs to be said," he said. "It's probably the digital immigrant in me talking. I might be the last man standing, but we'll all humans. I remind parents that kids need human contact."

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