Today's Millennial Generation: A Look Ahead To the Future They Create

BY MARTIN NIKIRK

It's 2009: The current millennial generation, the i-Kids, the "Digital Natives," the Net Generation students are now approximately ages 8 to 27. Many of these students are entering their years of career exploration while others are actively involved in career and technical education (CTE) programs in school or college. The millennial generation is the first generation to grow up with technology integrated into their lives—cell phones, i-pods, computers, the Internet, instant messaging, texting, MySpace and Facebook accounts, computer and console video games and multimedia. The future will be full of surprises and that surely will include more technological advances. One such advancement on the horizon is computerized clothing.

"Computerized clothes will be the next step in making computers and devices portable without having to strap electronics to our bodies or fill our pockets with a plethora of gadgets. These new digital clothes aren't necessarily designed to replace the PC, but they will be able to perform some of the same functions," according to Discovery's HowStuffWorks. Companies such as IBM, Levi, Philips, Nike and SensaTex are already exploring the possibility of putting us in designer computerized clothing.

"In Europe, Levi is already test marketing the musical jacket developed by the MIT Media Lab," HowStuffWorks notes. The millennial generation will have technology to manage their homes and maintain their lives. Sensors in homes will collect data and data will network to other data sources. Sensors will regulate the lights, temperature, audio, video, and security and safety in an environment. A voice interface with cell phones or PDAs or brain wave readers will communicate with the systems. In 2004 NASA announced that its scientists are working on such a technology—"subvocal speech" recognition.

"In preliminary experiments, NASA scientists found that small, button-sized sensors, stuck under the chin and on either side of the 'Adam's apple', could gather nerve signals and send them to a processor and then to a computer program that translates them into words. Eventually, such "subvocal speech" systems could be used in spacesuits, in noisy places like airport towers to capture air-traffic controller commands, or even in traditional voice-recognition programs to increase accuracy," according to a March 2004 NASA press release.

Long before 2059, this technology will be improved and contained or worn in a "necklace" to control computers. Then computer control will require thinking the words not saying them, and it will no longer require fingers for input. It will no longer be necessary to carry heavy laptops or own a desktop computer. In 50 years, the Millennials will be 58 to 77 years old—by then they would have made an incredible impact on he world. Technology, politics, water scarcity and energy are the major issues that forged their world. As leaders, they re-engineered education and took it from the current model developed for the industrial nation to one for a technological global economy. The Millennials are now winding down from leadership positions and looking to retirement. What was their world like?


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Future Career Technology Education Instructional Programs

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2059 CTE Completer Programs:

- Virtual World Design and Management
- Transportation Engineering: Smart Highways and Self-Driving Cars
- Computer Engineering; Intelligent Machine Design
- Managing Self Healing Computer Systems
- Nanotechnology in Science, Engineering and Medicine
- Propulsion Systems Engineering and Maintenance
- Aeronautics and Flying Cars Technology
- Biology: Organ Growing, Bionic Implants, Personalized Drugs
- Hydroponic Food Growing
- Alternative Energy Management
- Megatropolis: Developing, Infrastructure, Security, and Social Harmony
- Intelligent Materials/Intelligent Fabrics Management
- Planetary Terraformation and Ecosystem Manipulation
- Robot System Design and Analysis
- Health Occupations: Designer Bodies-Designer Babies
- Social Sciences: Robotics Partner
- Robot Medicine
- Intelligent Homes—Building Systems
- Transport Systems Operations
- Marketing in Virtual Worlds

Elective Courses might include:

- Neuroscience: Neural Pathways and Computer Design
- Physics: Nanotechnology and Custom Molecules Design
- Intelligent Materials
- Universal Communications
- Chinese as a Second Language

What Will CTE Classrooms Look Like in 50 Years?

Teaching in the classroom in 2059 will be very different—unique to those of us now 30 and older. The classroom as we know it today may not exist depending on the courage of politicians, the forces of nature and the availability of technology and energy. Virtual teaching-on-demand will be commonplace. Students will communicate with real teachers, robotic teachers, avatars and students of all nationalities. Personal communication devices with video, text and audio will translate all languages. Learning pathways and career choices for students may be prescribed based on brain structures. Teachers—human, robotic or avatar—will be expected to demonstrate high proficiency in computer hardware operations and interactive software applications. Teachers will be the facilitators of learning with every student having an "individual education plan" based on the student's neural network capabilities.

Schools will provide around the clock instruction—students enroll in classes when it is best for them to learn at a time that is appropriate to them. Virtual teachers, online worlds, multimedia delivery and robot-assisted teaching is the format of choice for learners. In addition to virtual teaching, CTE and academic courses may be learned by wearing "brain helmets" such as those ordered by the U.S. Army in 2008 (TIME magazine, September 14, 2008); this would give students more free time for internships, apprenticeship, hobbies, leisure time and work. Server technology may evolve and software licenses tailored to provide

students 24/7 access to school-licensed software needed for learning.

Brick and Mortar Classroom: Where the few brick and mortar classrooms exist, facial recognition systems will give students access to locations, computer tools and learning content. Privacy in the classroom will be limited since the world is based on data-mining, information management and security. Classroom privacy will only exist in subjects where new research technologies are being taught and tested; however, even those classrooms will be monitored.

Virtual Learning: Outside of brick and mortar, parents will be able to choose learning environments most appropriate for their children, thanks to brain scan and body physiology modeling programs that read the DNA and neural networks of learners to determine the right combination of multiple intelligences, capabilities, abilities and motivations. If the student was a "designer baby" all of those attributes were selected prior to birth.

What was learned from the research grants in artificial intelligence (AI) from the National Science Foundation in 2008 and 2009 will be applied to learning. AI-based simulation and modeling programs in all curricular areas provide motivating challenges for learners. The learning experience will be totally interactive. Teachers will not stand in front of classes but may be called upon to assist and teach in certain virtual-logical, portal, online and physical settings. Learning delivery systems will include:

- Instant information and powerful search tools
- Interactivity, such as movies, computer and video games on demand
- Virtual learning through portals and online events
- Computer online and real-time simulations
- Wireless voice/video/e-mail
- Robotic intervention
- Technology-graded assessment

Throughout the world businesses are investing in building interactive game products for students. Standalone, massively multiplayer online (MMO), and global games will hone student problem solving, critical thinking, analysis, and team-building skills. Video cameras will be everywhere on the planet interlinked to satellites. GoogleEarth will locate anything at anytime. Students will be able to learn geography, politics and world economy assisted by real-time imagery. GoogleEarth becomes GoogleUniverse.

What Technologies Will Our Educators and Students be Using?

The innovative technologies and adaptive technologies of today such as voice recognition, text-to-speech, talking book technology, speech synthesizers, and electronic note-takers will be third generation by 2059. Game helmets, used by the U.S. Army and video game players to read brain waves, will be used as tools to teach new concepts by brain connections. E-books will evolve to thin screen wireless readers.

Holographic walkthrough simulations will introduce the student to real-world scenarios. Multi-touch screen technologies will be commonplace. Voice recognition, subvocalization units and digital dialog between intelligent devices will guide the path of information between teacher and learner. Since the teachers of this generation were raised with technology, the digital disconnect will no longer exist between teachers and students as it did in the early 2000s. College teacher training programs will be reengineered.

What technologies will students use?

Today, technology is rapidly evolving. If Moore's Law continues to evolve, the number of transistors will continue to double every two years and computer "brains," the smaller and faster CPUs, will be imbedded in almost every fabric, consumer and electrical product. With optical computers or quantum computers, a powerful CPU the size of a desktop in 2009 will now fit comfortably in the palm of your hand in 2050, according to "The Next 25 Years in Tech," *PC World*, January 31, 2008.

Students will interact with and learn from:

- Universal communicators/universal language translators where you can talk and see anyone—at anytime
- Speech recognition
- Face recognition and biometrics
- Touch screen technologies and "virtual touch screen" technologies
- Virtual presence in seminars and workshops
- Self-fixing computers, self-healing software
- Brain helmets
- Computer environment control—and full spectrum learning (my own concept)
- Computer and video games as teaching and learning tools
- Computer simulations with student walkthroughs
- Wall-sized video and audio systems, curved screens, transparent screens.
- Interactive mirrors
- Robot teaching assistants and avatars
- Virtual reality rooms

At the end of a learning event or school day, the students will check their communication device(s) only to find a few messages with personalized advertising, then they get back to their real lives. T

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