



# Implications for Art Education

## in the Third Millennium: Art Technology Integration

BY SHERRY MAYO

**T**he pumpkin paintings displayed in the photo above represent an art education component in a 1960s' classroom. Most would agree that today art education is far more complex than making pumpkin paintings in October. For one, art education continually evolves in response to arts technology integration. But, what exactly are the implications for art education in the new millennium? In this article, I will present and show some of the problems of the life and educational issues related to art technology integration and then provide a list and explanation of what I consider to be important points to remember when approaching the teaching of computer technology in art education.



Students need access to media theorists and multi-media artists so that they can harness data sets, realize their power as media manipulators, and participate by building their own constructions.

As Bill Buxton, principle researcher at Microsoft, stated in 2000,<sup>1</sup> “Tomorrow everything will be a computer.” As the types of computer interfaces evolve into a seamless immersive environment, what are the problems posed by these technological gadgets for education? The need to develop new strategies for art education emerges as post-production labs become available in K-12 schools and universities. What is problematic is not access to information or better computer interfaces, but how do we assemble the vast information made possible through computer technology in meaningful ways? And how do we teach it?

Harvard’s *New Pathway* case-method approach to the teaching of Business and Law (Garvin, 2003) involves students in taking a critically selective view of information available on the World Wide Web. The curriculum

presents students with a case study that requires them to solve specific problems. Students assess the information embedded in the cases and determine what questions need to be answered. They then identify the problem and conduct research to find solutions. Instructors in this model facilitate the class by prompting students to critically question their findings. This strategy requires that the students develop critical selection skills and make meaning of the information they find.

Because available information greatly exceeds our capacity to process it, the need for information filters (data making sense of other data) appears to be the most crucial. For example, metaforms prosper at threshold points where the signals degenerate into noise, where the datasphere becomes too wild and overwrought to navigate alone. In these climates, all manner of metaforms appear: condensers, satirists, interpreters, samplers, translators. They feed on surplus information, on the bewildering sensory overload of the contemporary mediasphere. (Johnson, 1997, p. 32)

Johnson (1997) described the Human-Computer Interface (HCI) as the new street that we occupy, a "metaspace" and "bewildering mediasphere." This supported the notion that the HCI is the site of cultural consciousness that will determine social organization in the future. It also demands media literacy. Whereas case studies might provide training camps for human decision-making within a vetted environment, cyberspace needs to be filtered by end-users. The ability to select critically from the vast projection of mediated data is crucial. However, we also need to understand how to deconstruct rich and fast-paced media.

Media literacy requires the understanding that the development of art historians and artists (including the deconstruction of non-textual material) is directly related to formalism, semiotics, content, and aesthetics. Experts of image construction should contribute to the understanding of material produced and mediated through the HCI. We need art educators to evaluate new media products of entertainment, journalism, and government. Students need access to media theorists and multi-media artists so that they can harness data sets, realize their power as media manipulators, and participate by building their own constructions.

## Cultural Implications

*Information Age* culture creates a new environment to which art educators must respond. According to Bell (1973), Donald Michael's 1960s "cybernation revolution" asserted that the automation of production by computer systems would cause human labor to decrease. Human beings would supposedly increase leisure time and find a new purpose for being in the world aside from work. Instead of "cybernation" liberating the human being from work and increasing leisure time, it actually had the inverse effect. The high volume of information processing increased the time needed to make a decision. In describing a post-industrial society Bell (1973) cited Norman O. Brown, Michael Foucault, R.D. Laing, Charles Reich, and Theodore Roszak as placing "the transformation of society in consciousness: a new polymorph sensuality, the lifting of repression, the permeability of madness and normality, a new psychedelic awareness, the exploration of pleasure" (p. 476). This sounds like altered state theory from the 1960s-70s but it resonates with the phenomenon that occurred in both Silicon Valley and Silicon Alley in the 1990s. Bell (1973) predicted the swell of a professional and intellectual class and a widening gap between information-based culture and service providers. He also projected that the professional class would both require more service than before and a larger income to obtain what they would need. The increase of students seeking higher education would coincide with a society that was regulated economically, not morally.

In the 1990s, the idea of hyper-reality or the increased ability to manipulate one's view of the world via personal computing, placed the power of selection in the hands of the artist. To subvert media convention made the artist a cultural activist. Today many people have gained access to computers for their own purposes.<sup>2</sup> The utopian wish to democratize multi-media production through the personal computer has not (yet) toppled the establishment of the mega-conglomerates that control the media. However, in the dot-com days of the mid-1990s, Indie groups from Brooklyn to San Jose ran Internet companies in their studio apartments that provided challenge to even blue chip corporations. The hedonistic pursuits of new venture capital in the days of the dot-com era also coincided with a lifestyle that was increasingly global. New media GenXers expected to work at the beach with wireless technology. According to

Wallis (2006), "millennials" will demand this flexibility in their professional lives. Cubicle culture has not been supplanted, but the diaspora of urban information workers is a reality. The 1990s educational system was a composite of meritocracy, affirmative action, classic liberalism, and globalization.

Even though the intellectual may have surpassed the priest, as Bell (1973) predicted, the dilemma regarding moral regulation in a computer-mediated society still exists. The diversity of belief systems and the expectation for an individual to self-regulate poses challenges to economic regulation in sustaining the hyperkinetic millennial kid? What role does art education have in their development?

## Arts Technology Integration

In the 1980s people logged-in to large mainframes with centralized databases from their terminals. Today online databases create a less predictable landscape. Students are instant messaging in class online and/or text messaging through cell phones. We now have multifarious mechanisms of communication that are transforming social interaction and pose new challenges both in and outside the classroom. Local knowledge drives cultural production and necessitates sensitivity by cultural workers within a specific situation. In order for educators to gain a foothold within this environment and engage a new breed of students (Oblinger, 2003), they will have to become sensitive to new parameters and trends both locally and globally.

Speed and computational capabilities have increased. Since Ruth Leavitt's 1976 book, *Artist and Computer*, artistic forms of expression through computing have greatly evolved.

The term computer art still has clear meaning for many images and animations generated with customized programming, in interactive or networked formats, or based on virtual environments and complex behavioral simulations: A viewer is confronted with the tool as it delivers its message. For many other types of art that involve the use of computers, however, the term no longer applies because the fact of the computer's use is not of primary importance. As practitioners of more and more traditional art forms begin to utilize digital processes, almost all art and design will be computer art and design. (Spalter, 1999, p. 33)



I would argue for an active excavation of artists that have the aptitude and inclination toward these larger roles that would include not only scholarly research but also community outreach, creating a new artist model: artist as agent of social transformation.

There exist new forms of expression such as digital painting, eco-art, net-art, robotics, and artificial intelligence. Although an artist is free not to paint and not to code, the need for visualization across industry has expanded the need for artists. Wilson (2002) suggested that artists can make large contributions to industry in end-user interface design and scientific research. Artists such as Bill Buxton<sup>3</sup> functioned in this way and worked for academic, industrial, and governmental research groups. New technologies facilitated interdisciplinary conversations that produced hybrid constructions in all areas of study and commerce. Critically understanding the computer is crucial for today's artist.

Artists and art educators might have the edge on the future in the inherent constructivism of their practice. With pencil, brush, or welding iron, artists come up with creative solutions to open-ended problems. Sustaining artistic practice and the pursuit of an art education take resourcefulness and proof of value added to society. Technological media provides artists an opportunity to be media literacy experts, visualization modeling experts, interface designers, emergent technology developers, art educators, artist-researchers, and social engineers. Artists, like researchers, create new knowledge through studio practice. Artists, educators, and cultural objects are significant contributors to our evolution, and their contributions should be cultivated in art education models that integrate arts-technology experimentation and create new spaces for self-directed interdisciplinary inquiry.

### Art Education

To better understand how art education can contribute to human understanding, there is a need to ground art educational research within the theories and practices that surround art making. It is from this central site of investigation that other derivative practices such as critical and philosophical analysis, historical and cultural commentary, and educational praxis emerge. (Sullivan, 2004a, p. 800)

What role does the artist-researcher have in arts technology integration? There exist new opportunities facilitated by digital technologies that create new social networks and allow artists to occupy new spaces in terms of media experimentation and disciplinary cross-fertilization. Artistic pursuits involve different ways of knowing about being human and I foresee Visual Arts Research Institutes

(VARI) emerging that engage artists in research-driven artistic practices. I would argue for an active excavation of artists who have the aptitude and inclination toward these larger roles that would include not only scholarly research but also community outreach, creating a new artist model: artist as agent of social transformation.

Banff, a Canadian new media arts center, hosted the first New Media Art History Summit entitled: "Refresh! First International Conference on the Histories of Media Art, Science and Technology."<sup>4</sup> This historical moment marked the canonization of a new field of study. Fine arts departments added digital components to their foundations curricula and sought artist/educators who combined traditional materials with the digital.<sup>5</sup> Whether explicitly using "new media" in their title or not, programs dedicated to a flavor of new and technological media are growing at the college level. There exists value for having an artist with technology skills to contribute to problem-solving HCI design, emergent technology development, and digital aesthetics. However, there is also inherent value in artistic practice that is driven by self-expression, the qualities of poetry, aesthetic investigation, and cultural critique.

A conference entitled *Share, Share Widely: Conference on New Media Art Education*, hosted by the City University of New York in 2005, dedicated itself to examining issues of formulating a pedagogical position within the new media field by gathering a pool of educators together. There exists a struggle to gain respect for arts technology scholarship in academia.<sup>6</sup> Artistic practice is a form of research (Sullivan, 2004a) and artists need to take a role in the interpretation and empirical inquiry of the art forms that they release into social space.

### Arts Technology Implementation for K-12 Educators

The arts workshop that I direct is part of a community college dedicated to fostering digital arts education across the lifespan. We developed a pre-college program serving youth from 7 to 17 years of age. Our youth community spans from at-risk inner-city youth to a broader population of rabid technology consumers. The partnership with our local School District enabled us to realize our benefit to our local K-12 population. The community college is in an interesting position between K-12 and higher education.

It is the link between these two systems and can act locally to offer its unique resources to both communities. The experience that higher education has with arts technology education is not shared easily with other learning communities. Our arts workshop felt that it was within our mission to actively share our resources and curricula development expertise with other community partners. We serve an average of 350 youths per year through arts technology education offerings and have learned a few things that may be valuable to art teachers today. The following is a compilation of points to consider when teaching arts technology:

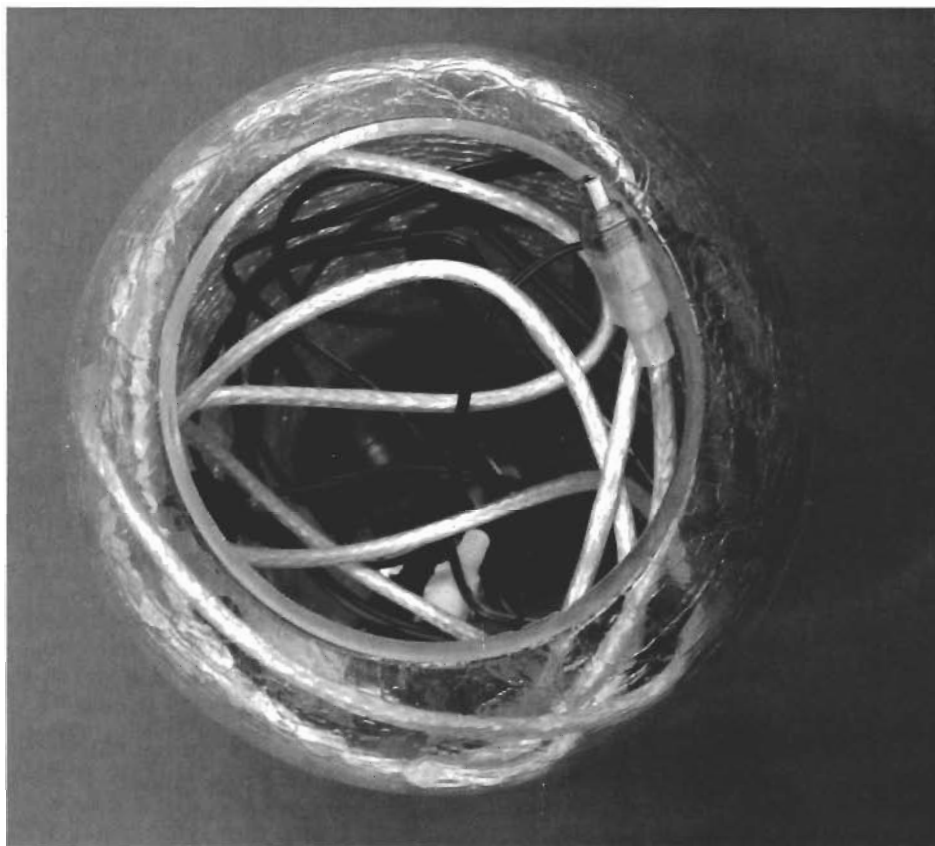
**Do not focus on teaching the software.** The software and its complexity can dominate a lesson. It is not essential that students learn every feature of a software package. It is more important that the lesson is project-driven. Students will easily lose interest in learning a software package without creating a project. Understanding the goal of the project and how the software is a valuable tool in achieving that goal is most important. Outlining the key concepts behind the technology will serve the student better than a lot of specific software functions. For instance knowing what vector graphics is and how it is useful in digital illustration is a foundation concept that will allow students to better use Adobe® Illustrator® as a tool.

**Teach your students to be flexible about interfaces.** Software and computer interfaces change rapidly over time. It is valuable to teach your students to focus on skills such as “copy and paste” that will remain the same across software programs rather than relying specifically on a software package. Many of the interfaces in arts technology programs have similarities and repeat functions. It is useful to draw attention to these features and demonstrate how students can repurpose skills and understand software on their own. Students benefit by learning how to use embedded help features to answer their own technical questions. There exist online tutorials for specific effects and podcasts for many software packages. Students should be made aware of these resources so that they may customize their software use.

**Emphasize pre-production.** Spending lesson time on planning the project is worthwhile. The pre-production process is the most vital phase of any art and design project. Story-boarding and a materials list should be

made before attempting to implement a project. Creating a production list of ideas/subjects that need to be photographed, drawn, video-taped, etc. should be done beforehand. This phase includes brainstorming on a project assignment to come up with a concept, doing visual research and collecting images and text to work from, and composing preliminary sketches and a project outline.

**Integrate traditional materials with the post-production process.** If you are an art teacher who finds satisfaction from the hand-made qualities of those pumpkin paintings<sup>7</sup> and miss the fingerprints in children’s artworks, you might consider combining pencils with pixels. Using the computer should not displace working with materials in the art room. Beginning with the pre-production phase provide many opportunities for integrating painting, drawing, and writing into a digital media-based project. The production phase is rich with opportunities to develop hand-made works of art and objects that can be later scanned into the computer and combined with computer illustration elements, digital painting, and special effects.





Art educators have the unique opportunity to integrate studio practice with technology that can help lead the way in teaching with technology and crossing boundaries between real-world materials and digital media.

**Use the Internet for visual research.** Do not forget to use the Internet in your studio art process. The Internet not only offers image-searching features in Google™ that can facilitate brainstorming for concepts but also provide reference materials for developing imagery. World Wide Web designers often use this technique to find images suited to the style (e.g. 1950s' cars) of their assignment that they then imitate to develop a new image. It is important that images are transformed significantly enough to be distinct from the original research source.

**Create a culture of responsible use.** It is important to discuss responsible computer use early on in arts technology experimentation. This spans from encouraging the use of appropriate materials among children to helping them to understand copyright and intellectual property. The computer has made these topics controversial. You may want to introduce the *Digital Rights Millennium Act of 1998*.<sup>8</sup> There has been much discussion regarding this legislation and recent appendices to it. It is often difficult for students to understand what is *Fair Use*<sup>9</sup> and what is theft of others' artwork.

**Incorporate dialog about technology into your art discussions.** The study of art today also demands an understanding of the technology used to make the work. In arts technology projects the use of technology is not just a means to an end but a part of what the art is about. Integrating dialog about technology and its history of development can be useful in aiding students to understand the world in which art exists today. Creating a technology timeline by decade in relationship to notable works of art can be helpful in fostering this discussion.<sup>10</sup>

**Introduce new media contemporary art.** Last mentioned, but perhaps most important is to introduce digital artworks. These works are rich subjects of discussion and idea generation for students. This is another way to use the Internet since much of this work exists online. The way we interact with artwork is being challenged and opens up new pathways for talking about work and learning. Today's students will continue to challenge art making and create new forms of expression never before envisioned. It is important to introduce them to contemporary pioneers.<sup>11</sup>

Art educators as teachers, artists, and researchers have an opportunity to utilize this new landscape of digital technology to develop the artist-researchers of tomorrow. Teachers are human programmers and agents of social transformation. Art educators have the unique opportunity to integrate studio practice with technology that can help lead the way in teaching with technology and crossing boundaries between real-world materials and digital media.

*Dr. Sherry Mayo is critically engaged with arts technology integration in higher education and is exhibiting in New York, nationally, and abroad.*

*E-mail: sherry.mayo@sunywcc.edu*

## REFERENCES

- Bell, D. (1973). *The coming of post-industrial society: A venture in social forecasting*. New York: Basic Books Publishers.
- Birnbaum, R. (1988). *How colleges work: The cybernetics of academic organization and leadership*. San Francisco: Jossey-Bass Publishers.
- Davis, B. (1988). Image learning: Higher education and interactive video disc. *Teachers College Record*, 89(3), 352-359.
- DeLappe, J., & Schreiber, R. (1998, February). New! newer! newest! Teaching new media. *New Art Examiner*, 25(5).
- Dooling, J. O., (2000, October). What students want to learn about computers. *Educational Leadership*, 20-24.
- Drucker, J. (1997, Fall). The virtualization of art practice: Body knowledge and the engineering world-view. *CAA Art Journal*, 1-11.
- Druckery, T. (Ed.). (1996). *Electronic culture: Technology and visual representation*. Aperture Foundation, Ontario, Canada: General Publishing.
- Druckery, T. (Ed.). (1999). *Art electronica: Facing the future, a survey of two decades*. Cambridge, MA: MIT Press.
- Gardner, H. (2006). *Theory of multiple intelligences*. Retrieved on Wednesday, June 7, 2006, from <http://www.infed.org/thinkers/gardner.htm>
- Garvin, D. A. (2003, September-October). Making the case: Profession education for the world of practice. *Harvard Magazine*, p. 56.
- Hanhardt, J. G. (Ed.). (1986). *Video culture: A critical investigation*. Layton, Utah: Gibbs M. Smith, Peregrine Smith Books, Visual Studies Workshop Press.
- Hanhardt, J. G. (1989). Film and video: In the age of television. *Image world: Art and media culture*. New York: Whitney Museum of Art.

- Heylighen, F. (1997, February 17). Cybernetics. *Principa cybernetica*. Retrieved on September 13, 2003 from <http://pespmc1.vub.ac.be/CYBERN.html>.
- Johnson, S. (1997). *How new technology transforms the way we create & communicate: Interface culture*. New York: Basic Books.
- Leavitt, R. (1976). *Artist and computer*. Morristown, NJ: Creative Computing Press.
- Lee, J. (2002, September 19). I think, therefore IM: Text shortcuts invade schoolwork, and teachers are not amused. *The New York Times*, Circuits.
- Oblinger, D. (2003). Boomers, Gen Xers, and Millennials: Understanding the new students. *Educause Review*, p.37-47.
- Spalter, A. M. (1999). *The computer in the visual arts*. Reading, MA: Addison Wesley Longman.
- Sullivan, G. (1993). Art-based art education Learning that is meaningful, authentic, critical and pluralist. *Studies in Art Education*, 35(1), 5-21.
- Sullivan, G. (2004a). Studio art as research practice. In E. W. Eisner & M. D. Day (Eds.), *Handbook of research and policy in art education* (pp. 795-814). Mahwah, NJ: Lawrence Erlbaum Associates.
- Sullivan, G. (2004b). *Art Practice as Research: Inquiry in the Visual Arts*. Unpublished manuscript, Teachers College.
- Traub, C. H. & Lipkin, J. (1998). If we are digital: Crossing the boundaries. *Leonardo*. 31(5), 363-366.
- Wallis, C. (2006, March 19). The multitasking generation, *Time Magazine*. pp. 1-9. <http://www.time.com/time/magazine/article/0,9171,1174696,00.html>
- Wilson, B. G. (1996). *Constructivist Learning Environments: Case studies in instructional design*. Englewood Cliffs, NJ: Educational Technology Publications.
- Wilson, S. (2002). *Information Arts: Intersections of art, science, and technology*. Cambridge, MA: MIT Press.
- Zajong, Arthur G. (1984). Computer pedagogy? Questions concerning the new educational technology. *Teachers College Record*, 85(4), 569-577.

## ENDNOTES

- <sup>1</sup> Bill Buxton spoke at the Computer Art Department, School of Visual Arts in 2000.
- <sup>2</sup> See YouTube <http://www.youtube.com/self-broadcasting>.
- <sup>3</sup> For information about Bill Buxton, see <http://www.billbuxton.com>.
- <sup>4</sup> See <http://www.banffcentre.ca>.
- <sup>5</sup> Recently, New Media programs have been sprouting including the New Media interdisciplinary B.A. at SUNY Purchase. In addition, there exists an undergraduate and masters program in New Media Arts and Science program at the Indiana University-Purdue University Indianapolis School of Informatics.
- <sup>6</sup> There exists *Leonardo Magazine*, a journal for new media scholarship, and now others are emerging such as *Digital Creativity* from the UK, dedicated to practice-based research in computer art and design education. However, the possibilities for arts-based investigation incorporating arts technology experimentation are broad.
- <sup>7</sup> See 1960s classroom photo on p. 2.
- <sup>8</sup> Digital Rights Millennium Act, 1998 see <http://www.copyright.gov/legislation/dmca.pdf>.
- <sup>9</sup> The rule for educators in using intellectual materials for educational purposes. For more information see <http://www.copyright.gov/fls/fl102.html>.
- <sup>10</sup> Two resources I frequently use to support classes are [http://en.wikipedia.org/wiki/Timeline\\_of\\_CGI\\_in\\_film\\_and\\_television](http://en.wikipedia.org/wiki/Timeline_of_CGI_in_film_and_television) and <http://accad.osu.edu/~waynec/history/timeline.html>.
- <sup>11</sup> This material may be hard to find. Two good places to begin are Rhizome.com and Eyebeam Atelier.

## Call for Articles, Commentaries, and Reviews on Policy and Art Education

### Special Issue of *Studies in Art Education*

The *Studies* Editorial Board is pleased to announce that the Winter 2008 issue will focus on policy and art education. Policy, formal and informal, codifies values, attitudes, beliefs, and public preferences influencing decisions and defining courses of action. Policy informs government, professions, interest groups, and associations among many other social groups. How decisions are made, and actions taken (i.e., autocratic, consultative, democratic, consensus), impact working relationships and establish the authority and credibility of an organization.

External and internal policy shapes art education occurring in public/not-for-profit venues such as schools, museums, and community arts centers. It also influences art education offered by for-profit locations such as those devoted to "crafts" and hobbies as well as informal settings such as the home or interest group. Given the ubiquity of policy, and the profound influence that it exerts on education, it is vitally important that policy be studied critically and thoroughly.

The purpose of this special issue of *Studies in Art Education* is to research, critique, comment on, and review policy as it relates to art education. Authors are invited to submit research manuscripts, commentaries, and media reviews on a range of topics including, but not limited to, policy generation; specific policy areas such as cultural policy and economic policy as they relate to art education; strategies for advancing the public dialogue on policy matters; historical studies; policy specific to particular venues and constituent groups; policy analysis; theoretical issues associated with policy; and critical and comparative approaches to policy.

Follow established submission guidelines.

Send research articles to Doug Blandy, Senior Editor, *Studies in Art Education*, 5249 University of Oregon, Eugene, OR 97403-5249.

Send commentary manuscripts to Karen Keifer-Boyd, *Studies* Commentary Editor, School of Visual Arts, 210 Arts Cottage, The Pennsylvania State University, University Park, PA 16802-2905.

Media reviews should be sent to Christine Marmé Thompson, *Studies in Art Education*, Penn State University, School of Visual Arts, 207 Arts Cottage, University Park, PA 16802.

**DEADLINE FOR SUBMISSION:  
October 1, 2007**