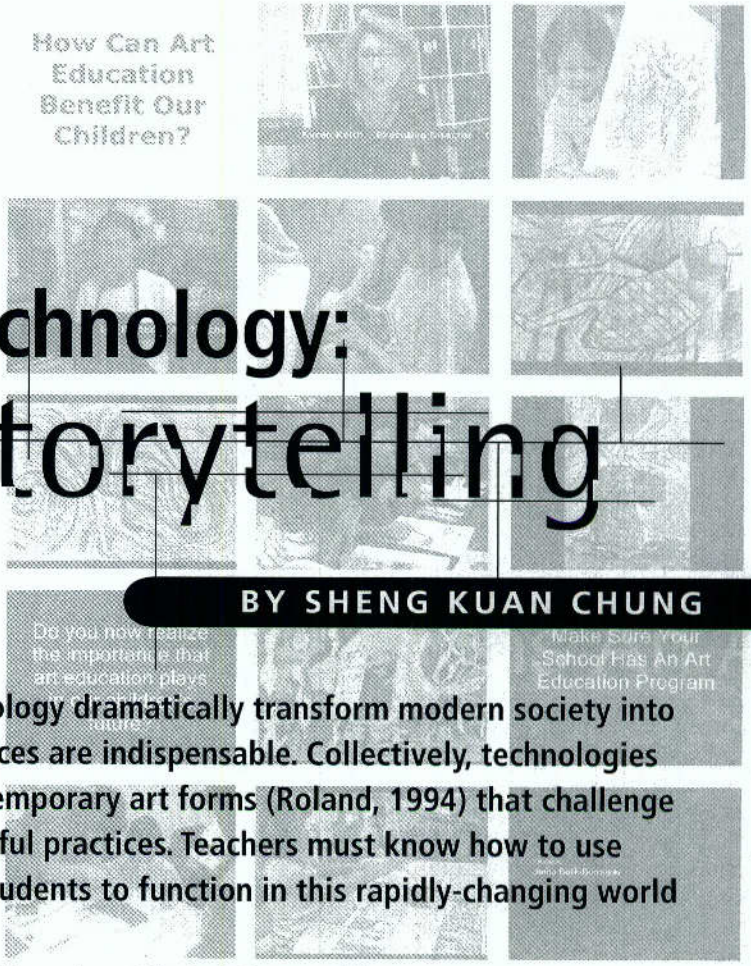

Art Education Technology: digital storytelling

BY SHENG KUAN CHUNG

Advances in computer technology dramatically transform modern society into an arena where digital devices are indispensable. Collectively, technologies create a new genre of contemporary art forms (Roland, 1994) that challenge art educators in search of meaningful practices. Teachers must know how to use computer technology to prepare students to function in this rapidly-changing world (Heise & Grandgenett, 1996).

Increasing concerns about promoting multiliteracy,[1] aesthetic sensitivity, and a critical faculty in future citizens lead many art educators to a reconceptualization of art education as Visual Culture Art Education (Duncum, 2004; Freedman, 2003). The application of digital storytelling to art education offers tremendous potential for teaching contemporary visual culture to the digital generation. Digital storytelling is "the modern expression of the ancient art of storytelling.... Digital stories derive their power through weaving images, music, narrative and voice together, thereby giving deep dimension and vivid color to characters, situations, and insights" (Digital Storytelling Association, 2002, para. 1-2). Digital storytelling not only addresses art education's current concerns with visual culture, computer technology, and interdisciplinary pedagogy, but also allows learners to cultivate and apply their multiple literacy, artistic, and critical skills to give voice to greater issues of importance to a worldwide audience. This article describes the implementation of an innovative course in art education technology at the University of Houston that teaches pre-and in-service art teachers how to apply digital storytelling to art education. The article proposes that digital storytelling is a powerful and relevant way to teach visual culture and art in the age of computer technology.

Digital Storytelling

A story is a narrative account of an incident, person, event, or position (Lambert, 2002). Stories vary in nature—they may be biographical, familial, ethnic, commercial, or instructional. A story is a restructured everyday experience through which we come to know, remember, and understand (Livo & Rietz, 1986). Through stories we explain, interpret, and assess situations, experiences, and ideologies, leading in turn to the creation of new meanings. As an intrinsic form of human communication, storytelling is prevalent in all aspects of human interaction. It connects generations of the past with the present and future to form, pass on, or reformulate wisdom, values, and beliefs.

In this article, digital storytelling refers to the practice of incorporating digital text, imagery, video, and audio into the presentation of a computer-mediated, multimedia story. Digital stories are presented in a variety of formats, for example, an all-text web page or a nonlinear interactive website (Paul & Fiebich, 2002). Dana Atchley is often credited with initiating digital storytelling over a decade ago (Lambert, 2002). He and his followers founded the Center for Digital Storytelling in Berkeley, California, where workshops are held to produce digital stories. Meadows (2003b) considered digital stories to be "short, personal multimedia

When making a digital story, creators use storyboards to help them efficiently organize the evolution of a story and keep it focused within certain parameters. In other words, the storyboard is the place to plan what media to use and how they might best work together to depict an important, engaging, and informative story.

tales told from the heart." He maintained that "digital storytelling isn't just a tool; it's a revolution" (Meadows, 2003a, p. 192). With Internet technologies, digital storytelling makes it possible for individuals to produce their own meanings. It allows students to develop and present their own ideas to the real world.

Integrating Digital Storytelling with Art Education

In the summer of 2005, pre- and in-service art teachers at the University of Houston learned about art education technology through a graduate-level course, which focused on the application of digital storytelling to art education. This course explored the potential of digital storytelling for visual culture art education through the expansion of technology skills and knowledge for teaching art in a digital age. The learning goals were (a) to experience digital storytelling as a powerful tool for art inquiry, production, and instruction and to create an instructional multimedia story related to art or art education; (b) to participate in class discussions and inquiries into digital storytelling as it related to art education; and (c) to evaluate digital stories created by both class participants and others. Student-created digital stories were used as short presentations to teach kindergarten through adult-aged students about an important event, theory, approach, style, person, or practice related to art/art education. Additionally, these digital stories incorporated copyright-free materials such as digital images, video clips, artwork, sound, music, text, and voiceover.

Exploring Topics

Before exploring concepts of digital storytelling, the participants viewed several completed digital stories created by grade-school children and adults to analyze the characteristics of a digital story.[2] The participants actively discussed and explored the nature and format of their digital storytelling assignment as a documentary or an essay conveying an important art or art education development, theory, or philosophy.

Using a 6" x 9" paper, the students brainstormed and noted possible topics related to art or art education. They formulated biographical, philosophical, and informational stories as well as stories focused on curriculum development, public art, community-based art projects, and modern and postmodern education. Some of the specific examples included stories about a local folk artist/art educator, personal philosophy of art education, program funding, state standards, class preparation for beginning art teachers, examining aesthetic questions, and investigating theoretical developments such as color theory and children's artistic development.

Script

Students conducted research both online and in the library on the chosen topics and completed a working script within two class sessions. Guiding questions for script preparation included: Is the chosen topic educational, informative, or significant? What is the story's purpose (e.g., advocacy or instruction)? Who is the audience? Does the story have a central point of view (argument)? What characters, events (what, how, where, and when), settings, and plots are involved with the story? Does the story raise other issues? The instructor and student peers used these questions to critique student scripts. Each working script was to be as complete as possible, if not final, for the storyboard phase.

Storyboard

Storyboarding is the process of visualizing how a story will look. A storyboard is a sketch or blueprint for a movie production, theatrical performance, multimedia digital story, or animation (Lambert, 2002). Storyboarding involves planning the sequence of scenes and the interaction of the incorporated media components. When making a digital story, creators use storyboards to help them efficiently organize the evolution of a story and keep it focused within certain parameters. In other words, the storyboard is the place to plan what media to use and how they might best work together to depict an important, engaging, and informative story. Ways of drafting storyboards vary. A story script should be ready before sketching a storyboard. This helps creators easily visualize content in terms of character, setting, and plot. Creators need to consider several components when sketching storyboards for a digital story; these include imagery (e.g., photos, artwork, graphics, and maps), video, text, voiceover, audio (music and sounds), slide transitions, and image effects.[3]

The students received letter-sized photocopies of a storyboard template for their storyboarding. To simplify changes, students pencil sketched their storyboards and wrote page numbers on them for tracking scenes. Figure 1 shows a student example to help explain the process of storyboarding. Students broke down the working script into key phrases and jotted them down in the script area following the sequence of the story. Because each phrase would likely contain two or more images, which would require two or more squares on the template (See Figure 1), the students wrote down and visualized one to two phrases at a time and then sketched images, made scribbles, and/or took short notes in the square to indicate what to include. Slide transitions and computer-mediated image effects were determined according to the type of software, such as iMovie™ or Windows® Movie Maker 2.1, individual students used.

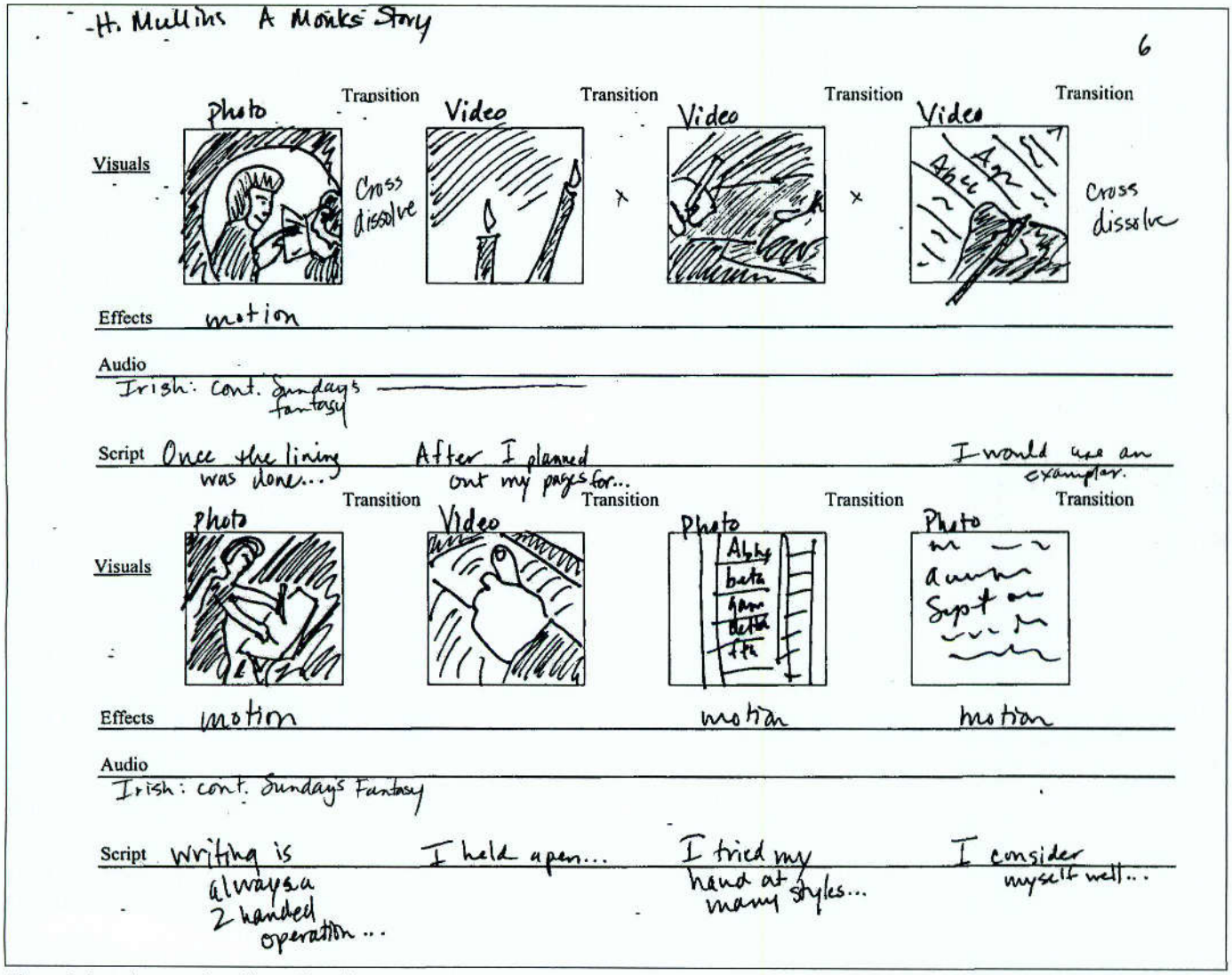

Figure 1. A student storyboard by Heidi Mullins.

Production

After completion of the storyboards, students proceeded to the production stage, using multimedia-enabled, Internet-ready computers, equipped with speakers and microphones. Numerous software applications are available to produce multimedia digital stories. Software should be chosen according to the types of computers in a computer lab (see Figure 2). Because my school uses Windows XP computers, I introduced Microsoft® Photo Story 3, a free software application for Windows XP that is ideal for beginning computer users and can be downloaded online. Microsoft Photo Story 3, as its name suggests, is specifically designed to create stories from still digital images. For stories without a video component, I recommended using Microsoft Photo Story 3. To cater to individual needs and technology skills, the students explored other movie-making software applications such as Adobe® Premiere®, PowerPoint®, iMovie™ (for Apple Macintosh only), and Windows® Movie Maker 2.1. Based on my teaching experience, except for Adobe Premiere and PowerPoint, the other software programs are user friendly, straightforward, and easy to learn. In the end, one or more students used each set of software mentioned above. Some created stories on their laptops, while most used school computers and saved files to a USB flash drive.[4] The class used Adobe Elements® or Adobe Photoshop® for image editing and Goldwave®, another free application, for sound editing. Because the class used different software applications, peer assistance was critical in making the course a success.

Software	Platform
Microsoft® Photo Story 3	For Windows only (free download). Ideal for grade-school children and for creating stories from still images.
Windows® Movie Maker 2.1	For Windows only (free download). Ideal for grade-school children.
Apple iMovie™	For Mac only (free download) Ideal for grade-school children.
Adobe® Premiere®	For Windows and Mac
PowerPoint®	For Windows and Mac

Figure 2. Popular software applications for creating digital stories.

Image Preparation

Images, photos, and video are central to a digital story and can be obtained online, in print, or students can produce them on a computer. Because one of the main goals in creating digital stories is sharing them with a larger population via the Internet, the students either obtained copyright-free material or secured written permission for using copyright-protected material. They read and discussed articles on copyright laws and fair use standards for the proper use of copyright-protected images.[5] Like most university libraries, my school library subscribes to a fee-based online image database available to students and faculty. Images obtained from this type of database are less of an issue in terms of copyright infringement. Popular search engines like Google and Yahoo offer image-search tools. Students can combine a keyword and file type to search for relevant images, sound files, and video clips. For example, to locate a tree image, one might combine the keywords *tree* or *trees* with a file type, such as tree.gif, tree.jpg, tree.bmp, or tree.tiff; for a tree video clip, one might use tree.mov or tree.avi; and for a tree-related sound file, one could search for tree.wav.[6]

In addition to gathering images online, the students checked out scanners, digital cameras, and camcorders from the school's technology center to obtain images or video clips they could not find online or elsewhere. Those wishing to videotape an interview were required to secure release permission from their interviewees. With images, video clips, and music files at hand, the students were ready to compose their stories with a chosen software application. They manipulated, inserted, and modified the various media components, adjusted slide transitions, and added image effects.

Criteria for Evaluation

When producing digital stories, students should know the instructor's expectations in each learning phase and be clear about the criteria by which the instructor will evaluate the stories. As the students composed their stories, they paid attention to the following guidelines of the elements of an effective digital story. Exceptions to these guidelines should be made if they add a constructive attribute to the story.

1. An effective and engaging digital story incorporates the appropriate amount of images, audio, video, text, and image effects. The prime consideration should be the meaning of the story, not fancy or overwhelming use of image effects or slide transitions. All incorporated media should be integrated appropriately to achieve cohesion.
2. A successful story should achieve a sense of visual-auditory harmony. In other words, a scene leading the audience to contemplation and reflection should avoid using fast-bite sounds, music, or transitions.
3. Students should choose appropriate background music and avoid mixing lyric music with voiceover, which may distract from or conflict with the meaning conveyed. They should pay attention to how music conveys feelings and emotions. Instrumental music is usually more appropriate for story segments containing narration.
4. Video can add a dramatic emphasis to the story such as breakthrough, transformation, or action. Still images can convey feelings and emotions and are ideal for emphasizing a viewpoint.
5. Personal voice is essential to a digital story. All students should narrate their own stories. Personal narration adds greater authentic and emotional substance to the story. Interesting narration uses appropriate pauses and is spoken in a conversational style (not reading or reciting the script). When narrating, students should relate to images or video clips and coordinate with background music. They should also practice before formal recording. Sound-editing software (e.g., Goldwave®) is available for modifying voiceover, sound, and music.
6. With respect to pacing, a fast-paced scene normally conveys strong emotions such as excitement and tension, while a slow-paced scene indicates reflection and relaxation. Music tempo and image transitions (slow or fast) may affect the audience's emotions.
7. Lambert (2002) maintained that "the rhythm of a story determines much of what sustains an audience's interest" (p. 59). A more interesting and engaged story will typically use a more dynamic pacing (i.e., pause for reflection and action for revelation), meaning that a successful story contains an appropriate combination of fast- and slow-paced scenes. Mechanical pacing may bore the audience and should be avoided.

Critique

The final class session was devoted to group critique. Each student presented a completed story to the class, elaborating on both its personal and professional meaning. Class participants evaluated each story based on (a) creativity—Is the story aesthetically or artistically interesting?, (b) cohesion—Are multimedia formats integrated appropriately?, (c) success—Is the story persuasive or engaging?, and (d) meaningfulness—Is the story informative or educationally significant?. My students' stories included an advocacy of art education, a questioning of standardized tests and their impact on art education, a biographical account of a Houston art philanthropist, an aesthetic inquiry into the purposes of art, an introduction to campus public art at the University of Houston, a historical account of making ancient manuscripts, and a piece on art careers.[7]

The following summarizes three student stories: Barbara created a piece with PowerPoint for adolescents titled "What is art for?" She intended to present it to her high school classes to discuss this important question of aesthetics. Her work began with video interviews of college students on campus as she approached them with the key question: "What is art for?" She depicted numerous examples of art as she articulated how art communicates "symbolic, religious, spiritual, and ceremonial messages." She also talked about modern art and its practice. Barbara concluded with a list of emerging aesthetic questions to provoke further discussion. While creating her story, Barbara encountered numerous frustrations and problems with the computer (e.g., failed to find the file she saved). She was pleased with her final accomplishment.

Amy[8] recognized that most college students might be unaware of the public art pieces on their University of Houston campus. She created a story using iMovie™ on her notebook to show the campus public art collection. Her story began with a brief history of the public art collection at the university and discussed how funding and art purchase committees are formed. Throughout the story, Amy acted as a tour guide walking the audience to three pieces while providing details about their creators, the materials used, associated costs, and historical information. She interviewed students who happened to be near the pieces, asking them for their thoughts about these

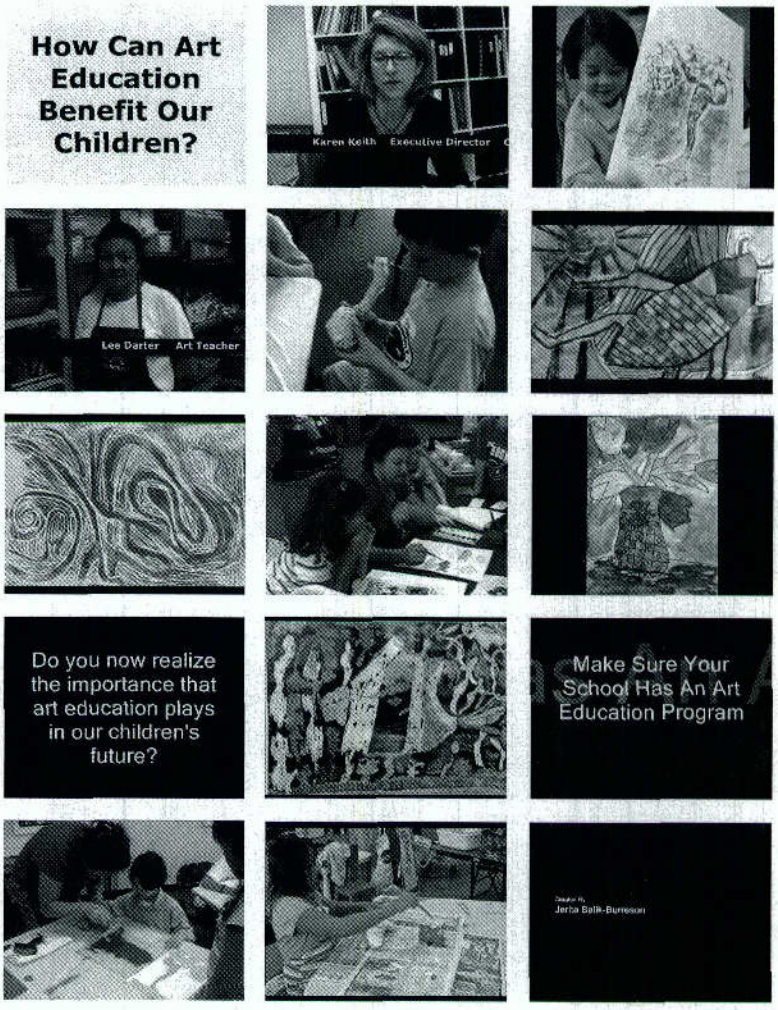

Figure 3. Selected frames from digital story by Jerita Burreson.

Is the story aesthetically or artistically interesting? ... Are multimedia formats integrated appropriately? ... Is the story persuasive or engaging? ... Is the story informative or educationally significant?

works on campus. At the end, Amy challenged the audience to think about what the campus would look like without public art in order to illustrate the importance of its existence.

Produced with Windows® Movie Maker 2.1, Jerita's story (See Figure 3) consisted of a series of interviews with her school principal, an art teacher, an art director, and a retired university art educator, in which she asked them how art education benefits children. The class thought that her interview with her school principal was a productive way to promote art education in her school. As two of her interviewees responded, "Kids need to think critically and imaginatively and art gives them that opportunity," and "In art you have multiple solutions to problems [sic]." Jerita summarized the benefits of art education and cited research findings to urge better funding and support for art education in public schools. She also offered practical strategies to help both parents and the public to become involved in supporting art education.

The class of 7 rated favorably each of the student digital stories during peer evaluation. Except for two students who were initially uncomfortable narrating their stories, most had positive things to say about this learning experience. They all considered the amount of time (48 hours) dedicated to this project to be appropriate; they also appreciated having an opportunity to learn about digital storytelling and to apply it to their own art teaching. Most agreed to make their works available on a university website to share with other art teachers. Although some students were first-time users of Adobe® Premiere®, Microsoft® Photo Story 3, and Windows® Movie Maker 2.1, their multimedia stories showed a professional execution (See student works at http://www.coe.uh.edu/arted/).

Conclusion

The application of digital storytelling to art education is an interdisciplinary, inquiry-based, hands-on project that integrates the arts, education, local communities, technology, and storytelling. Through digital storytelling, students develop and apply multiliteracy skills, aesthetic sensitivities, and critical faculties to address greater issues of importance to a larger audience.

In the creation of a digital story, students perform multiple tasks as researchers, playwrights, designers, media producers, and educators. They explore topics of significance, compose a narrative, create computer images, record a personal voiceover, apply contextual knowledge, and analyze ways in which information and mood effectively convey a story. Digital storytelling provides art students with a stimulating aesthetic means of developing hands-on critical-thinking and problem-solving skills, of addressing relevant social issues and personal concerns, and of cultivating aesthetic sensitivities.

In the age of computer technology, many American K-12 schools have ample funds for maintaining a computer lab but not for obtaining art supplies. The implementation of digital storytelling offers art educators another avenue to implement an innovative and relevant art program for the technology-savvy digital generation. Dunn (1996) noted that "Art teachers who are technologically literate are uniquely positioned to play a major role in their schools' attempts to restructure in the face of an ever-changing global marketplace" (p. 8). Moreover, with the availability of Internet technology, digital storytelling allows individuals to voice larger concerns from their own perspectives to an ever-widening audience. Digital storytelling is a meaningful and powerful way to promote visual culture art education.

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ENDNOTES

[1] Duncum (2004, p. 253) defines multiliteracy as "the making of meaning through the interaction of different communicative modes" such as music, the spoken voice, sound effects, language, and pictures.

[2] The Scott County Schools in Georgetown, Kentucky, posted many examples created by their students and teachers on their website at http://www.scott.k12.ky.us/technology/digitalstorytelling/ds.html

[3] Depending on the type of software used, different software applications (PowerPoint®, iMovie™, and Windows® Movie Maker 2.1) have slightly different slide transitions and image effects.

[4] A USB flash drive acts like a portable hard drive. It is about the size of an eraser capable of storing and transporting large amounts of data.

[5] Linda Starr's online article "The Educator's Guide to Copyright and Fair Use" offers helpful information on this topic at http://www.educationworld.com/a_curr/curr280.shtml

[6] Bernard Robin, Associate Professor of Instructional Technology at the University of Houston, has compiled a list of resources for searching images, video clips, sounds, and music online at http://www.coe.uh.edu/digital-storytelling/tools.htm

[7] Words are too limited to describe these digital stories. Some student works will be available on the University of Houston art education website at http://www.coe.uh.edu/arted/

[8] "Amy" is a pseudonym.