

It is through art, and through art only, that we can realize our perfection; through art and art only that we can shield ourselves from the sordid perils of [technology].

Oscar Fingal O'Flahertie Wills Wilde (1854-1900) *The Critic as Artist* (1891)

Education and Role of Technology in bringing Arts to Schools

One mode of inquiry cannot describe the whole of human existence. For example, science, history, and art all reveal different truths about any one subject or event and exist as three of the fundamental forms of inquiry. Their discrete languages form an essential part of the basic curriculum that relates to the knowledge and skills of civilization.

The principles of the arts relate closely to those in other disciplines. For example, discrete vocabularies support both experimental discoveries in science and factual analysis in history. Similarly, each art has its own vocabulary and organizing mechanisms. However, in addition, the arts have masterpieces, each exemplifying its own analytical principles and experimental methods. Consequently, the curriculum in art disciplines comprises the principles and methods of the masters and not experimental discovery or factual analysis.

Consequently, art instructors must provide students with access to the content of the arts disciplines. As with any other discipline, early work with the basics makes more advanced work possible. In art, this early work, inspired by masterpieces, develops skills that result in both technical and aesthetic competence.

Combination of professional and educational practice has become a symbiotic imperative. The relationship between the meaning of art and the teaching of art has become central to the quality of cultural advance. Therefore, art education consists predominantly of learning and not of teaching as the relationship between instructor and student develops to become mentor and protege. This type of learning requires personal interaction between the mentor and protege in very different ways from disciplines that focus purely upon the factual and the quantitative. It requires a synthesis of intellectual, artistic, and professional skills as a basis for developing social respect.

Responsibility lies with art instructors to lead and to remain vulnerable through professional and personal example. This results in the cultivation of students' creative ideas and provides a mechanism for challenge. Egocentricity, prevalent in many disciplines, has no place in art instruction. Consequently, it becomes essential to remove all notions of status and evaluation of competence in relation to grade level. The most important learning achievements in the arts have traditionally resulted with children under ten years of age. Arts instructors agree on the

importance of beginning an arts education before the age of ten to insure success at higher levels of learning in later years.

Historically, the professions have set high standards directed toward general intellectual enlargement and refinement; not narrowly restricted to the requirements of technical or professional training. Instructors should try to emulate these standards through preparation that not only covers the theoretical aspects of masterpieces but also the realism of new communication methods and new communications tools in technological environments.

The seven liberal arts in medieval universities comprised the trivium and the quadrivium that derived from a curriculum of seven sciences introduced in the sixth century. The trivium formed the lower division of grammar, rhetoric, and logic and the quadrivium formed the upper division of arithmetic, music, and geometry. These curricula formed a plan for teaching because curriculum studies related to a field of inquiry into the development, implementation and evaluation of education programs. Today, liberal arts curriculum encompasses both the humanities and the social sciences.

The US Congress, in establishing the National Endowment for the Humanities (1965), defined humanities as including "language, both modern and classic; linguistics; literature; history; jurisprudence; philosophy; archaeology; the history, criticism, theory and practice of the arts; and those aspects of the social sciences which have humanistic content and employ humanistic methods." Forming one of the two main curricular divisions, these subjects constitute a common interest in the moral values and cultural attainments of human civilization. However, in K-12 these principles, so important to the humanities, have eroded through heavy emphasis on vocational education. Fortunately, the universities have retained humanities curricula that assure a genuine liberal arts education.

Primary inquiry relates to four questions:

1. What basic subject matter to teach?
2. What learning process to adopt?
3. What practical curriculum to develop?
4. What affect the curriculum encourages?

Some instructors become oriented toward outcome, viewing curriculum as a structured series of intended learning goals.

Other instructors include in a curriculum all the opportunities for learning. This approach addresses both intended and unintended outcomes but pays greater attention to education than to particular achievements. Some theorists distinguish between curriculum and instruction; others believe that the dichotomy relates falsely because the method of teaching has a great

influence on what is learned. Consequently, some educators argue for curriculum goals related to subject matter, others for curriculum goals related to society, and others for curriculum goals related to students. Unfortunately, many programs in the public schools become influenced by local and state government. Another detrimental effect relates to the strong influence of art textbooks and "educational" art software presently touted as artistically all embracing.

In relation to the fine arts the term realism has conveyed a number of different meanings. Until the end of the 19th century it most often connoted naturalism, or the representation of the external world as it is actually seen. During recent decades of the 20th century the term realism has been used to describe the movement away from abstraction and toward representational art.

Suzanne Knauth Langer (1895-1985), influenced by the philosophy of Ernst Cassirer, developed a logic of signs and symbols, initially applied to music and later extended to the whole range of the fine arts. Langer defined art as the creation of apparent forms expressive of human feelings and appearance. Fundamentally opposed to behaviorism, her study of the mind postulated that all mental phenomena exist as modes of feeling. However, the present inclination in art education contrasts Langer's approach in that technique tends to become more important than aesthetic.

The present system of higher education contains resources and commitment for providing arts education. They exist as an important educational aspect for students who will eventually work in other professions and technologies. The arts disciplines comprise a unique means of communicating information. As such, they relate as essential components of both education and technology. Basic work in arts subject matter provides the foundation for personal development and interpersonal communication skills, however, these do not comprise the only goals of art education.

Arts education relates to the development of a basic understanding of dance, music, theater, and the visual arts. This understanding gives the student the ability to work with artistic elements and structures in many different disciplines. Comprehension in any discipline requires a basic knowledge of language, structure, method, and skills. Therefore, knowledge of the language and grammar of each art form, as they relate to creation, performance, or exhibition, becomes an essential communication skill in planning and using advanced technologies.

Arts education should prepare students for higher education and should have educational parity with English, mathematics, science, the social sciences, computer science, and foreign languages. Arts education helps students:

1. To understand the unique qualities of each of the arts.
2. To appreciate how people of various cultures use the arts to communicate.
3. To comprehend different artistic styles from historical periods and cultures.

4. To know the social and intellectual influences affecting artistic form.
5. To develop communication processes and communications technology skills

Conducive environments, professional presentations, and humanistic studies do not substitute for the acquisition of fundamental skills. However, they form an important part of an arts education.

Arts education supports the following goals:

1. To establish an environment conducive to artistic awareness, understanding, and respect by using elements of the arts to teach in other disciplines. This provides an artistic working environment and makes pursuit of aesthetic culture a priority.
2. To gain experience through professional presentations of the arts through lectures and shows by visiting professionals. This provides opportunities for students to attend performances and exhibitions and a means for first hand exposure and independent study.
3. To present materials on the arts as a humanities discipline by focus upon historical and cultural development. This creates in the student an ability to recognize masterpieces.
4. To emphasize the content and practice of the arts disciplines through teaching basic language, grammar, and method. This becomes a prerequisite to performing or playing musical instruments.

The benefits that accrue from art education relate to:

1. Cultivation of an understanding of the human experience.
2. Solution of problems in areas that require technological expertise.
3. Development of aesthetic and cultural judgments through personal exposure.

Information Retrieval System for Instruction and Learning Research

The faculty of Williams College and the staff of the Massachusetts Museum of Contemporary Art with the technical support of the Center for Interactive Computer Graphics have developed an interactive graphics system for use as a research and presentation tool for museum settings.

The museum's concept of a world-class museum of 20th century art in rural Williamstown, Massachusetts began when Count Giuseppe Panza the Milanese industrialist offered the college his modern art collection on long-term loan. This collection comprises one of the finest private collections of modern art.

The interactive graphics system uses an integrated text, imagery, audio, video, and animation database that juxtaposes text and visual images. It allows both researchers and students to explore the non-sequential relationship between art and concepts. This multivariate media database supports the Williams College of Art, Chapin Rare Books Collection, and the Clarke Institute as an academic resource. The system also has inter-disciplinary links with the art, art history, literature, and philosophy departments.

Instructors and Students relate as Partners in Learning Experience

A recent advertising campaign for the Washington Alliance for Arts Education features a photograph of a child's finger poised on the play button of a tape recorder. The caption underneath reads: "Our children think this is how to play music." The need for significant arts instruction that goes beyond the ability to access the sight, sound, or feeling of a painting, etude or ballet has been a consistent message of arts educators for decades. Technology has been employed in arts classrooms for decades. One example is in the world of fine art where the viewing of slides has been used to engage students in reflective critique and historical evaluation. The ever increasing sophistication of technology - computers, interactive video, laser discs, samplers and the like - will continue to be used by arts educators.

But the advancement of technology does not and should not preclude the presence of high quality teachers. Nor does it preclude the primary relationship that must exist between the teacher and the student. This relationship must be viewed as a partnership where both the student and the teacher are engaged in on-going explorations in at least four areas. These areas make up what is being called discipline based arts education (DBAE). The first area is production. Here the student and teacher engage in acquiring the skills and the discipline needed to produce a work of art (studio or performance). The second area involves developing the vocabulary needed to talk about the arts critically and based in an understanding of the third area, the historical. The fourth strand in DBAE is aesthetically - based and calls for the need to place art in the political, social and personal context of the time. What DBAE assumes is a mentor-type relationship where the student and teacher are involved in these kinds of inquiry at the same time. The same assumption holds true when technology is added to the basic areas of DBAE.

One of the most significant advocates for arts education today is Howard Gardner. His theory of multiple intelligences opened the door on a new thinking about the importance of arts education and the kinds of instruction being offered in schools - not just in the arts but in other areas as well. His book, *The Unschooled Mind*, challenges educators to evaluate our current modes of instruction, materials and curriculums. He too emphasizes the relationship between student and teacher.

"My own view is that a well trained and effective teacher is still preferable to the most advanced technology, and that even excellent hardware and software are to little avail in the absence of appropriate curricula, pedagogy and assessment. Still, other things being equal, the capacity to immerse oneself in a problem using the latest technology and to be able to manipulate data or events electronically can make a significant contribution to student learning. ...such educational interventions are viable to the extent that they can heighten exploration, apprentice-like and cooperative relationships, multiple representations of data, and the assumption of different roles" (Gardner, 1991, pp. 223-24). Technology in arts education cannot replace the crucial apprentice-like relationship necessary for true engagement and understanding to occur.

Professionals and Academicians collaborate in Teaching Process

The need for apprentice-like relationships brings us to this third point. Artists as well as arts educators need to be engaged in the educational process. Arts in education programs such as the artist in residency programs funded by the city, county, and state agencies in Washington offer schools the opportunity to bring artists into the classroom to work directly with students and teachers. Often these artists engage in their own work at the school during their residency and they welcome students and teachers to watch them work and to talk about their work. At the same time, the artists work with the students to help them create projects and learn skills. In addition, many artists offer after-school workshops for teachers who are interested in learning more. As these artists become more adept at using technology, they too will bring more of those programs into their work in the schools. However, technology must not be allowed to replace the artists in residence.

In the same vein, students and teachers must continually be afforded field trips to theaters, museums and other such venues. Viewing slides of paintings, listening to digitally recorded symphonies or interacting with CD ROM programs on Shakespeare must not be thought of as adequate "arts experiences". They are - and we must be vigilant in reminding ourselves of this fact - representations of the REAL thing.

In another and equally important sense, artists have much to offer the field of educational technology design. One example of this is Brenda Laurel's work in using theater as a way of thinking about the human-computer interface. In her book, *Computers As Theater*, she explores some of the commonalities between the two. Examples of what she finds are:

1. Both theater and computers have the capacity to represent action in which humans can participate.
2. Both use human agents or those who initiate the action.
3. In both, the representation is all there is or What You See Is All You Get.

Laurel's work is a wonderful example of how professionals in the arts can collaborate with the academicians (and technocrats) in the facilitation of process and design.

Aesthetics and Media through Representation not through Replication

There is definitely a powerful connection between fine art and communication art [graphic design]. Fine arts and electronic art have a new focus in communication design. The designers of interactive, multivariate, media computer programs now work with many of the same audiovisual concepts that have preoccupied artists since de Stihl and Bauhaus during the early part of this century. They explore the relationship between artists, performance art, video art, and modern information design.

Hypermedia systems - the use of computers to interactively organize and relate data of all kinds - need design guidelines for presenting audiovisual information. Fine artists can play a key role in developing those guidelines by combining sensitivity as an artist and insight and background in art and art history with acumen as a specialist in communication design. Hypertext has recently created much interest as a means of manipulating data. The user can roam freely through a database pursuing connections that, in a more rigid world, would otherwise be too evanescent to have merited investigation. However, users of hypertext tend to find themselves getting "lost in hyperspace." They wander from text to text with no structure, and no way to get back to another starting point.

A solution to the problem of control of recursive research may improve with "HyperGlyphs." HyperGlyphs presently run on an IBM PC. The software comprises a model hypermedia database that theoretically catalogs artists, descriptions of their works, details of relevant exhibitions, and individual paintings. The user may surf through the database to discover and identify images and then access related information. Eventually, sound and video clips will become integral to HyperGlyph databases. However, the need exists to use this type of software with larger mainframe databases to include the paintings of masters of previous centuries. This will create a resource that includes the very important historical aspects of fine art that tend to become ignored in contemporary settings. Use of such a database would yield a new experience every time a user accessed the database to explore the relations of one artist to another.

Every individual has a special purpose in accessing information. Therefore, the information structure must relate to the use the individual has for the information. To create these new structures, one must make the connection between fine arts and the design of information structures in new and productive ways. One of the new technologies that will soon support the design of these structures presently exists as HD TV (High Definition TV). Because HD TV has digital programming (similar to personal computers) both HD TV and personal computers will soon function as an integral unit. They will become genuinely interactive.

The way we access archival materials will soon change again. Some of the software presently in use exemplifies the possibilities of technological support of both aesthetics and media through representation. The landscape design program curriculum developed by Mark Kuster at Joliet Junior College, Illinois, incorporates LANDCADD software to view and manipulate computerized images. The program allows students to create a building from a blueprint and then landscape the property by adding a walkway, a driveway, plants, bushes, and trees. They can rotate the images to view them from different angles and can wear special eyeglasses to see the images in three dimensions. However, another software package, VIDEOSCAPE comprises a more sophisticated, realistic program because it replaces computer graphics with photo-imagery. For example, students may shrink and enlarge elements on the screen to simulate the growth of trees. They may also manipulate the images to indicate the amount of shade that the trees will provide after two or three years growth.

Conclusion

Through our discussion of these four issues, it can be seen that technology and the arts have had an on-going partnership. Together they also have a potentially exciting future. The questions concerning the use of technology in arts education must be raised however in order to continually challenge the assumptions that technology might be making. Some of these assumptions might be that technology can replace the teacher/ student relationship that we think is vital to understanding the four areas of arts education; that technology might come to take the place of actually seeing, hearing and feeling the Real thing; that technology is placed in an elevated position of knowledge rather than the basic retrieval system that it inherently is; and that the use of the technological miracles such as drafting and sampling might do away with the learning and mastering of basic technique and discipline that is the foundation of solid learning in the production area of the arts.

Our responsibility - as artists, as educators, as "techies" - is to ask questions, keep ART in our daily life, create exciting environments for ideas to grow, and struggle to make sure we are letting the computers do it for us.

Just as societies change, so do evaluations of skills. Who would now value the massive feats of rote linguistic memory so prized before books were widely available? Perhaps, if computers assume (or consume) an increasing proportion of the domain in which our linguistic and mathematical skills are exercised, our own society may evolve into one where artistic skills are the most highly valued because computers handle everything else!
[Gardner 1993 p36]

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