Art + Technology *integration*

Developing an After School Curriculum

by j. david betts

James, Grade 7

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More than three million children in the United States participate in some type of after school program (National Study, 1993) offering wide-ranging benefits to children, their families and the community (Pederson, et al, 1998). After school programs of many descriptions provide responsible adult supervision for youth, constructive activities and insulation from harmful peer pressures during high-risk hours (Fox & Newman, 1997). Common goals include psychosocial development, education, recreation and career awareness (Schwartz, 1996). No impact assessment has been done of the many programs that are in place; however, studies of programs for low-income children have shown positive effects (Posner & Vandell, 1994). The important role of the arts in prevention programs for youth has been acknowledged for some time. "The promises the arts hold for prevention . . . are grounded in a growing number of evaluation studies and in scientific studies of human development." (Bonnie Bernard in Magie & Miller, 1997, p. 18). The arts education community, both locally and nationally, is an important source of successful programs that keep young people on track and promote a variety of useful art skills and activities.

The Multimedia Arts Education Program (MAEP) is an ongoing, intensive, after school computer-mediated art

technology program begun in 1996 by the Tucson Pima Arts Council (TPAC) in Tucson, Arizona. This five-semester program targeted at-risk middle school youth from disadvantaged families. Students worked with professional artist/teachers, learning to do computer graphics and publishing, language arts and word processing, computer animation and video production. Each semester was structured around the acquisition of basic art and computer skills as well as the completion of individual projects.

Curriculum Development

The need for a formalized curriculum arose from the need to be able to continue the program in a cohesive form, without regard to the availability of the original teachers, because the program's repeatability and replicability are important considerations for its growth and continued success. There is also, of course, an unrelenting need for financial support for the program, which costs an estimated $5,000 per student for the five semesters, which includes 600 hours of instruction, materials, educational incentives, bus passes and a computer. Also, the initial cost for the four labs was over $20,000.

The prospect of discontinuing the program weighs heavily upon the sponsoring agencies. How do you tell youngsters who have spent a year in the program that they are not going to get their computer? In order to avoid this outcome, staff paid close attention to the development of the MAEP curriculum and the evaluation of its effects.

At its inception, the MAEP planned to let any formal curriculum evolve from the interaction of the artist/teachers and the students. MAEP faculty members had been recruited as artist/teachers from the arts community, bringing professional art technology experience to the program, and several University of Arizona graduate and undergraduate students worked with the program as teaching assistants (TAs) in the labs. Often the artist/teachers, who typically did not have much teaching experience, were working out their learning objectives on the fly, so having another adult in the lab was beneficial. The TAs recorded the actual teaching operations involved and helped to refine the activities in each lab. Lab activities began with basic skills and concepts; the ultimate goal was to combine the arts activities with the available electronic tools. The lesson outlines, which were later reworked with the artist/teachers and the director, are now being assembled into a

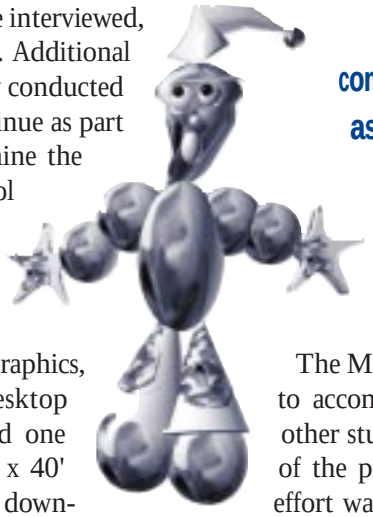
Hypothetical schedules.

The table below illustrates some possible ways that students might complete the program schedule. Most start with language arts and all end with portfolio within two years. Family vacations and sports activities accounted for most of the semesters off.

	Summer	Fall	Spring	Summer	Fall	Spring
1	Language Arts	x	Animation	Graphics	Video	Portfolio
2	Graphics	Animation	Video	Language Arts	Portfolio	x
3	Language Arts	Video	x	Graphics	Animation	Portfolio
4	Language Arts	Graphics	Video	Animation	Portfolio	x
5	Video	Language arts	Graphics	x	Animation	Portfolio
6	Language Arts	Animation	Video	Graphics	Portfolio	x

manual that will include program procedures and curriculum.

In addition to working on the lesson plans, the TAs recorded observations about the MAEP activities, and students completed a perceived self-efficacy and attitude questionnaire several times during their participation in the program. Students' written journals were collected in each of the labs, along with artifacts such as computer graphics, videos, poems, and animated logos. Graduating students were interviewed, as were their parents or guardians. Additional follow-up interviews, some already conducted with program graduates, will continue as part of a longitudinal study to determine the effects of MAEP on high school graduation.



MAEP Labs

The four basic labs (computer graphics, animation, language arts/desktop publishing and video) each lasted one semester. The interconnected 20' x 40' rooms in the TPAC building in downtown Tucson shared a common area with a smaller room where the portfolio class was headquartered. Each lab experience included art and design theory and practice, technology instruction, literacy activities and school-to-work skill components. A semester consisted of sessions from 4:00-6:00 PM, Mondays through Thursdays. The fifth semester portfolio class, which capitalized on their cumulative skills to produce a web page, a newsletter or a multimedia program, met Thursdays and Fridays after school and Saturday mornings.

Students used professional computer application programs as they learned how to make aesthetic choices in design, develop critical skills and revise their work. As much as possible, the artist/teachers maintained professional standards for productivity, and students were held to high standards for their job performance and products.

MAEP students kept journals, wrote proposals for their projects and created storyboards, video logs and scripts, as well as poems and stories. Their work was collected on a server and published as a CD-ROM at the completion of the program. Students created a "culture of critique" in which they grew accustomed to having their work reviewed and commented upon by their peers and others. In turn they learned to participate in constructive criticism of the work being done by their peers.

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The MAEP design was flexible enough to accommodate family schedules and other student activities, but two aspects of the program were salient issues: An effort was made to start students in the language arts lab whenever possible; and the portfolio lab, which builds on the other lab experiences, was always offered during the last semester. Aside from these two requirements, there is no set way for a student to proceed through the program (see hypothetical schedules, opposite).

Multimedia Labs

The four basic labs were connected with a bank of printers and a server. There was one Internet connection in the beginning, which offered limited use, but by the end of the spring semester of 1998, all the Mac and PC computers were linked to the Web via the TPAC server. The common area was used for snacks (a very important part of any after school program), and the labs coordinated the use of the tables for drawing, writing and collaborative work.

Above: Alienz, *Andres, grade 8*

Computer Graphics Lab

Curriculum Summary

Week 1 will be a thorough review of all rules, regulations and procedures for the fall semester. The first two days will be dedicated to classroom policy and behavior expectations. I will perform numerous enthusiasm-building demonstrations of the material that will be covered during the semester, and by the end of the first week, the students will be introduced to their first project, a personal logo. At this time they will be asked to begin sketching and planning the logo.

Claudia, grade 8

Week 2 will be dedicated to the teaching and exploration of the conceptual design process using experimentation in mini-projects with cut paper and acrylic paint. These skill-building projects will be an aid to the students' understanding of the conceptual process which begins long before the computer is used as a tool. At the end of the week, they will be assigned a weekend homework assignment of 50 thumbnails for their personal logo, which will give them plenty of time to plan and sketch their thoughts.

Week 3 is when the students will be given a chance to scan and manipulate their hand-done projects from the previous week. Adobe Photoshop will be the first program to which they will be introduced. As a way of easing them into its complexities, I will have them interact during a series of lessons that will demand a progression of skills. At the end of this week, the students will meet with me individually to review the direction and progress of the project.

The language arts lab was equipped with six Apple 580s for word processing and basic desktop publishing using ClarisWorks and Microsoft Creative Writer II. Students wrote poetry and newspaper articles and learned to use the Web for research. Many of the participants were limited in their English proficiency, so there was an emphasis on grammar and vocabulary, as well as on reading. A library of age-appropriate chapter books was at their disposal as a resource and for recreation. Students were expected to keep a journal of their own writing and to share their work with others in their group.

The computer graphics lab contained five Mac 7200 Power PCs, a scanner and a digital camera. Students were able to find and download images from the Internet in order to integrate them into their own designs using professional electronic arts tools such as Adobe Photoshop, Adobe Illustrator, and Quark Xpress to create their projects. They designed and produced projects such as personal logos, business letterheads and family calendars, often working from their sketchbooks, bringing ideas to the computer for further processing and publication. These activities involved the integration of many design skills and a professional approach to project planning and management. Student work was posted regularly around the room and online.

The animation lab contained six Amiga computers on which students developed narratives and characters and produced two-dimensional computer animations with a program called D-Paint II. The basic techniques of animation were explored via examples on tape and in practice. Students also created three-dimensional figures out of clay, and one group experimented with Claymation with their peers in the video class. Student work on storyboards paralleled one of the writing exercises used in language arts.

The video lab was equipped with several camcorder kits with lights and microphones, SVHS and Hi-8 format video editors and an Amiga computer equipped with a Video Toaster special effects generator. Students learned

how to practice basic production techniques, such as camera work and editing, using this equipment in group and individual projects. Storyboard development and experiments with animation techniques such as Claymation were also important activities in the video class. Students learned that teamwork, planning and attention to detail were very important aspects of video production, so each semester the class completed a collaborative project that was presented at the graduation ceremony.

The fifth and final lab was the portfolio lab. Here, students worked on combining what they had learned in the previous four basic labs into a portfolio for presentation. They moved from producing a newsletter about their experiences, to a web site, and finally to a multimedia presentation on CD-ROM using Hyperstudio software. Experience and collaboration among the artist/teachers have shown that many of the various lab activities can be articulated. That is, narrative stories that originated in the language arts class became animations; logos created in the computer graphics lab appeared in the produced videos. These truly electronic portfolios, representing the culmination of projects completed in earlier labs, have been very impressive. The graduation ceremony at the end of the semester provided the first audience for these products.

Patrick, grade 8

Upon completion of the five-semester program, each student was awarded a desktop computer. This feature of the program greatly motivated students, as one might expect, because the families of program participants did not have computers at home. The students also received an educational incentive of $25 twice each semester upon attaining the required skill benchmarks and completing their independent projects.

Learning Objectives and Incentives

To help the artist/teachers develop a scope and sequence for their arts technology lab, brief tests were given to students at the beginning and end of each semester. Each artist/teacher developed a series of questions based on what the students would be expected to learn in order to meet the requirements of their lab, so the test questions varied from semester to semester as the courses took shape and the staff changed.

As a result, outcome skills were identified, and the artist/teachers used these as a basis for evaluating student completion of the skill requirement for each lab and eligibility for their first $25 check. (The negotiation and completion of an independent project in each lab was required to earn the other $25 educational incentive.)

On each test, students were asked questions related to the operations that they were to perform in each lab. The definitions of various terms for tools and actions that they would encounter were included. For example, these concepts, among others, were covered:

- Video: pan and tilt, white balance, control track
- Graphics: dpi, marquee, selecting
- Language Arts: keyboard shortcuts, plot, dialogue
- Animation: cell, squash and stretch, frame rate

Students were asked to describe the operations or processes, such as logging, scanning,

Video Production Lab

Sample Learning Objectives

Students will be able to do the following:

- Identify the VHS, SVHS and Hi-8 cameras, their parts and functions, and the associated tapes, connectors and cables
- Name the different types of microphones and their properties
- Explain light in relation to filmmaking
- Produce a storyboard, log sheet, and edit decision list

They will demonstrate competency in:

- Manual operation of the camera, including audio metering and aperature setting
- Proper use of a tripod
- Shooting according to storyboard
- Safe and effective use of lights
- Basic editing, including insert and three-point edits.

rhyming and storyboarding, that they would be using in the lab activities. These tests were formative, measuring the students' knowledge in the art technology. Assigned projects and critique sessions focusing on their individual and independent projects assessed their skill and higher-level integration. Overall, evaluation was based on performance and the demonstrated understanding of these concepts.

These data proved to be very useful in creating the learning objectives for each lab and the formalized curriculum. Rather than establishing a summative, or pass-fail, evaluation for the students, the skill test helped the group to focus on the upcoming activities and provided a benchmark for student knowledge at the beginning of each semester. This was an iterative process in which the test helped to create the curriculum. The influence was bi-directional, each part of the process helping to formulate the other.

Population

Approximately eight to ten middle-school students, selected from a pool of 16 to 18 different schools enrolled in each of the five labs each semester. Since the second year (1997), the population profile has remained constant:

- Most started the program during the sixth or seventh grade and finished before entering high school.
- Male and female students were evenly apportioned.
- A very small number were on free or reduced lunch programs at their school.
- 54% were bilingual Spanish, 79% Hispanic, 7% Native American, 7% African American and 7% Anglo.

Most live in neighborhoods associated with downtown Tucson where the high school graduation rate is less than 40 percent, but students are required to maintain a C average in school in order to continue in the program. There is currently a waiting list of interested students and families.

It is important to note that students did not have to audition for this program; instead, they were selected for their interest in and stated commitment to the five-semester program, as well for at-risk factors such as low family income. Interviews with the students and their parents were an important part of the admission process, emphasizing the scope of the program and the expectation of commitment on the part of all parties rather than focusing on the student's skills or personal history.

History

The Multimedia Arts Education Program began in 1996, when TPAC reeceived a grant to incorporate a computer graphics lab and an animation lab into its after school arts education program. The first cohorts of students tended to be in seventh grade or above, with some in high school. The faculty members were hired primarily for their skills and artistic

ability and for their experience working with children. Initial funding came from the National Endowment for the Arts Challenge Grant, which supported the first three years. Subsequent grants from the Stocker Foundation, Target, Inc., the City of Tucson, Pima County School-to- Work, the Amazon Foundation, US West, the Cummings Foundation and the Arizona governor's office have kept the program going.

Joel, *by Isaac, grade 9*

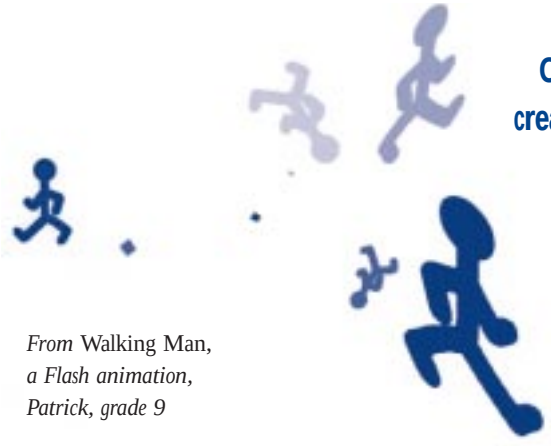
As the program evolved, other after school practitioners wanted to replicate it, so ways were sought to formalize the curriculum based on the teaching, rather than by imposing a set scope and sequence. The author, as principal investigator, has been involved in the program from the initial grant-writing stage, and has also developed evaluative procedures and consulted with the teachers on curriculum as well. Having the teachers create the pre- and post-tests for their students served to focus attention on desirable educational objectives. These tests were modified several times, reflecting the development of the teaching methods and changes in personnel, and, from this beginning, a series of learning objectives, discussed below, was developed.

The program grew, and additional labs in language arts and video were added. At the end of the second year, the portfolio class was added. Also, after the initial year, the average age of the students entering the program was lowered to sixth grade, which kept the program more strictly middle-school based.

The TPAC arts education director, with input from a community-based advisory committee, administered MAEP, but the faculty was regularly consulted on matters of policy and encouraged to create their own curricula. Guidelines for student deportment and program expectations promoting a safe, supportive and productive atmosphere evolved over the first three years of the program. There were, of course, occasional behavioral issues typical of this age range to be dealt with, so the program director worked with the faculty and consulted with the TPAC advisory committee to determine policy on issues such as deportment and attendance, developing guidelines which established a sequence of warning letters and disciplinary actions, suspensions, and expulsions. For example, students received warning letters and were put on "contracts" for inappropriate behavior, absence, and/or tardiness. Development of the contract was a collaborative effort involving the student, the faculty, the program director and the parents or guardians.

The success of the program can be attributed to a combination of circumstances. Program administration used a developmental, iterative approach to setting standards, with policies and procedures developed on a case-by-case basis. The faculty was dedicated, caring and learner-centered, although each semester brought new challenges to the program in the form of behavior and commitment problems. During the year of this study (1998-99), the university TAs made important contributions to the program as participant observers and teaching aides. Regular communication among faculty, staff and parents helped to establish a coherent set of guidelines that has been published and distributed to parents and prospective families.

At first, the curriculum was informal, based on the teachers' sense of what was needed, with these needs varying from lab to lab. For example, the language arts lab was more directly linked to school curriculum because the TPAC staff and faculty had conceived MAEP to be based, in part, on language arts, and a portion of each lab would require these skills. Basic keyboarding, which most of the students under-



From Walking Man,
a Flash animation,
Patrick, grade 9

Opportunities for collaboration and exchange of creative ideas led students to pick up the tools at hand and to participate and communicate.

stood before entering the program, was secondary to grammar and composition, skills which needed development in most of the incoming students for them to be able to write reflective journals, proposals and reports for their independent projects.

In the computer graphics and animation labs, the computer itself was more basic to the program, and students learned new computer tools and techniques based on the application programs used. Video activities involved the same media tools, but students were also required to write proposals as well as scripts, and to use the computer-based special effects system. Writing proposals and abstracts was part of each lab, and students were required to draft a proposal and a time line for an independent project in each lab, identifying the project and its components, the applications and hardware to be used and a schedule for its completion. The abstracts consisted of one-page descriptions of the finished product.

University / Community Partnership Grant

In the fall of 1998, the Kellogg Foundation awarded a grant to facilitate both a longitudinal study of the MAEP and the codification of the curriculum. The primary goals of the grant were to institute a longitudinal study of the effects of the program on high school graduation rates and to document the curriculum used in the labs. Crucial to this enterprise, known as the University of Arizona/Tucson Pima Arts Council Multimedia Partnership Project, was the hiring of University of Arizona students to work as teaching assistants in each lab.

In September, about a month into the school year, Andrew and Grace, graduate students from the Department of Language, Reading and Culture in the College of Education, were hired. They each worked three or four afternoons per week, with the dual responsibility of collecting data as participant observers and "working into" each teacher's lab as a coach and mentor to the students. Both had some prior teaching and computer experience.

The job priority at the outset was simply to be of help to the artist/teachers. The three experienced artist/teachers had developed their own teaching process without other adults in the room. They were concerned that the small labs would be crowded because they were expecting full enrollment (40-45 students) for the spring semester, including some children with special needs, such as LD and ADHD. Although they were all art technology specialists and professionals, the language arts teacher was new to the program. Meetings held with the program director, the teachers and the principal investigator helped to establish some reasonable expectations for the way the partnership would function.

The TAs initially reported feeling that they were not being fully utilized. However, as they observed in each lab and got to know the teachers and the students, they were able to make themselves more useful even if they sometimes only served as monitors, allowing the groups to make short field trips around the downtown area more easily. There was also a learning curve associated with the various software applications, but, as older students themselves, the TAs were able to gain enough skills to support the middle schoolers in short order. Gaining experience in the structure of each teacher's lab and

in the knowledge domain of the art technology were the keys to their successful integration.

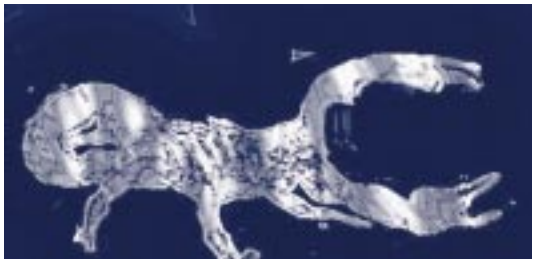
The Arts Council was also looking to the Partnership Grant for support in the development of curriculum materials. At this point in MAEP development, all labs were to be wired for expanded Internet access at each workstation, so there was an important opportunity for the TAs to help the teachers integrate the Internet into their labs.

The participant observation notes submitted from that first week indicated that the TAs found the atmosphere of the program to be "laid back." Overall, there were many indications that, compared to their school situations, the students liked the less regimented atmosphere of the labs. In fact, the language arts lab was running without very many rules at all, and "the kids were all over the place," as one TA wrote. Many comments referred to the perceived lack of discipline, but the TAs were impressed with the level of computer skill and knowledge displayed by many of the students. Their time during the first week was divided among the four labs; observations included an introductory lesson in one lab and notes on students' work in another. They also drew comparisons between the different teaching styles, one teacher using a step-by-step approach, the other more comfortable with exploratory activities. They each spent an entire session with one teacher during the second week.

By the end of the first semester, the TAs had become a part of the MAEP environment, having learned a lot about the students while working with each teacher in the four labs. Grace gravitated to the computer graphics lab and Andrew to the language arts lab, but toward the end of the semester we decided that they should concentrate on the language arts lab, so they undertook the development of Internet resources for the language arts lab. The web site they created contained numerous links to age-appropriate language arts sites and offered new possibilities for the teacher to begin to "work into" her class, and these suggested activities were well accepted.

For the second semester (Spring 1999) three new TAs (two undergraduates from fine arts and an English graduate student), including a replacement for Andrew, were hired, each for a full-time lab assignment. This arrangement made it easier to settle on appropriate roles for the TAs in each lab. Grace would specialize in the computer graphics lab and begin working right away on some suggested ways to integrate the Internet into that curriculum. George was assigned to the video lab, Celine to the computer animation lab and Nick, the graduate student, to the language arts lab. Each had the same assignment: to do participant observation with twice-weekly report/reflections e-mailed to the principal investigator; to become useful as aides in the various lab situations; and to work with the lab teachers to continue to develop the curriculum. As the arts council's Internet server became a reality, more and more use was to be made of the Internet, so TAs were also asked to develop a series of learning objectives based on the skill tests and lesson outlines each teacher had developed.

Raymond, grade 9



Scorpion, *Jesus, grade 8*

The observations and commentary they submitted described a period of adjustment similar to that of the first semester. However, it was not as much of an issue, perhaps because it was the second semester of the partnership project, and the TAs were able to start at the beginning of the second semester, each working the full four days a week in just one lab. This new arrangement seemed to help establish good working relationships and greater acceptance by the students and artist/teachers.

The Multimedia Partnership Project was able to purchase some software and equipment for use in the lab, including some interactive CD-ROMs and a low-cost Alpha-Smart keyboard composition machine. The CD-ROMs were used primarily to facilitate research and to promote constructive computer activities for the handful of students who frequently arrived early, before the program began. The Alpha-Smart Pro supplemented the five computers in the lab, providing an opportunity to use a portable computer.

The results of the portion of the University of Arizona/Tucson Pima Arts Council Multimedia Partnership Project designed to formalize the curriculum indicate a steady refinement of the goals and objectives for the labs through a reciprocal process based on iterations of the initial instruction about the tools and procedures involved in each lab, the lesson outlines, the skill tests, the learning objectives and the curriculum. The final curriculum, when published, will represent the work and input of the major stakeholders in the program: the faculty, the administration and the kids.

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