The Creative Palette: Children’s Artistic Practice in a Technological Landscape

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Abstract: This paper poses questions for engagement and reflection surrounding arts education for children that arose from the meeting of an innovative technological environment with the embodied practice of contemporary dance choreography. These questions emerged from residencies completed in 2006 and 2007 with fourth and fifth grade dance students from the Herrera School and educators from Arizona State University’s Arts, Media, and Engineering Program (AME) and Department of Dance. The Situated Multimedia Art Learning Lab, or SMALLab, is an environment that creates visual and sonic feedback based on the movement of students within it. After exploring basic choreographic concepts in a dance classroom and creating choreographic studies, students worked in SMALLab to consider their artistic choices in an interactive environment as it related to their original compositions and creative intent.

As children fuse art making with technological innovation, how do we, as teachers and mentors, adapt our concepts of teaching and evaluation in this developing field? This paper addresses the questions brought forth during this residency as technology and art making merge. How can creative practice be analyzed within a contemporary artistic pedagogy? How can creative practice be evaluated within an interactive environment? What did the Herrera students gain from creatively engaging with each other and with SMALLab in this specific context?

1. Introduction
   A. SMALLab

   The Situated Multimedia Arts Learning Laboratory (SMALLab), developed by the Arts, Media and Engineering Program at Arizona State University, is a mediated interactive space designed for educational purposes.
Technology-wise, SMALLab consists of an open physical space (15’x15’x12’) framed by a lightweight aluminum trussing which supports a six-camera vision-tracking system, a top-mounted video projector for floor-projected visual feedback, and four audio speakers for immersive, spatialized audio feedback. Students collaborate and interact with sonic and visual media through gesture and full body movement by manipulating physical objects, in this case illuminated “glowballs,” through the interior of the space. Within SMALLab students explore and learn such principles as electricity and magnetism, creative story-telling techniques, and the complexities of ecological systems.

B. Herrera School for the Fine Arts

Herrera School for the Fine Arts is located in an urban, inner city Phoenix neighborhood and experiences the attendant high crime and poverty rates associated with American inner city, urban life. Arizona’s proximity to the US/Mexico border accounts for a high percentage, 87%, of the schools English Language Learner (ELL) students. The majority of the student population, 84%, qualifies for the free lunch program under federal guidelines. Herrera became a fine arts magnet in 1990. Students at Herrera attend classes in dance, drama, instrumental music, choral music and studio art.

C. SMALLab at Herrera

In October 2006, during Herrera’s fall intersession, the SMALLab was integrated into a public school setting for the first time. Ten Herrera fourth, fifth, and sixth graders took part in the sessions, which lasted one and a half hours per day for five days.

For this first phase of the project, curriculum focused on the concepts of curved and straight lines utilizing both the body and space. The goals for the week were threefold. In addition to introducing the movement concepts of curved and straight lines, we sought to provide an introduction to the concept of interactivity within a mediated environment and to introduce the SMALLab infrastructure and its associated technologies.

The learning module that became the predominant technological interface was the Sound Poem. With the Sound Poem, students could trace a line on the floor of SMALLab and affect the quality, tempo, location, and pitch of the sound being projected into the space. Students generated text and sounds based on their own interests in response to the curriculum. These were uploaded to SMALLab to create a customized sound environment for each
The students explored the manipulation of these sounds and visual imagery based on their own movement explorations. Finally, students reflected upon these experiences and how they could further inform their movement, sound and visual choices in the space. The developed material was then presented in a short lecture demonstration and performance at the end of the week for friends and family.

The second SMALLab installation occurred 5 months later in March 2007, during their spring intersession. We concentrated on the instruction of beginning dance composition and extended the workshop to 8 days, working with the students for 2 hours each day. The extended workshop allowed us to develop a more in-depth curriculum. Six Herrera fourth and fifth graders participated in Stage 2. The decision to work with fewer students on this occasion was intentional. We wanted to provide each student with more exposure to SMALLab. Faculty and students from the College of Education were added to the team to provide formal assessment methodologies. The primary objectives for this particular installation were for students to learn choreographic and technological vocabulary, integrate technology into their creative practices and create a rubric through which students assessed their creative process.

During Stage 2 of the Herrera installation of SMALLab, several evaluation methods for experiential media were developed and tested. We determined that one of the important questions was the degree to which these experiential interactive technologies support a dance composition curriculum unit. We were interested in exploring rubrics that might be used to begin to measure student learning in such a dance and technology curriculum.

The evaluation team developed and tested several rubrics to begin to measure learning and dance performance. They observed each day of the 8-day unit and recorded how students behaved in SMALLab, how they described what they learned and why they did what they did. The observers also described the teacher's lessons and guidance, as well as overall interactions among the students, teacher, dance professors, and the technology team.

2. **Opportunity for Creative Exploration**

The Herrera residencies occurred outside the traditional school day, during their intersession. Working outside school hours allowed far greater flexibility for both teachers and students, providing opportunity to work with ideas that differed from the typical public school learning environment. Learning took place in an exploratory and creative context. Sadly, American students, particularly those from the inner city, do not regularly encounter
curriculum unrelated to testing. This experience allowed and in fact, encouraged, the children to be imaginative, ask questions, and follow their creative interests, free from the burden of the ‘testing’ environment. These residencies had no connection to testing and the kind of limited interaction with content that a high stakes testing climate requires. With this liberty, the teachers could approach their lesson plans and teaching creatively and instinctively. These low-income students had the rare opportunity to experiment with very advanced technology.

3. Changing the Learning Paradigm – Creative Choice
A. Composing Dance

Traditionally, dance composition has been taught through conventions based on the acquisition of formulaic skill sets tools based around musical structures such as rondo, ABA, etc, rather than through experiential, experimental and dynamic inquiry. The choreographic intent of the student is developed through the lens of these structures with little to no emphasis on their appropriateness for the subject matter of the piece and ignoring relevant artistic trends, including post-modernism and the advent of interactive technology. We circumvented traditional pedagogy for teaching composition, hoping to steer the child toward the discovery of an authentic choreographic vocabulary originating in the child’s lived experience.

We looked closely at the idea of “intention” within choreographic design asking such questions as ‘Why are you doing what you’re doing,’ ‘Can you explain this particular movement’ and ‘Can you talk about what it means, where it came from?’ This process spawned many conversations centered around aesthetic choice. The issue of “choice” was visited daily through choreographic studies of space, time and energy.

We saw the purpose of this curriculum as twofold. One, we wanted student experiences to be central to the pedagogical direction. Two, we wanted to create a true hybrid model where technology was embedded in a manner in which it was seen as another tool in the student’s creative palette as opposed to something auxiliary.

In this model, students drove their own learning by exercising aesthetic choice. They addressed skills related to movement, artistic process, and hybrid arts creation. Furthermore, by developing their own assessment tools and creative work, students develop higher order thinking skills of analysis, synthesis, and evaluation.

Students were first introduced to the ideas of time, space and energy as basic elements of the dance-making process. They explored these concepts
through improvisatory exercises. Students were also introduced to the concept of imagery as experienced through visual, auditory, verbal and tactile sensory modes. The teacher brought in examples, such as a cabbage, to demonstrate the diversity and scope of imagery. She had the students close their eyes and listen to books dropping, paper ripping, water pouring and so forth. In response, the students constructed images of these sensory experiences with words.

Students chose an image on which to base a dance composition. They worked with their chosen image and expressed it through the movement vocabulary of time, space and energy, integrating all these concepts into their compositions. Each dance reflected a unique interpretation and manipulation of this vocabulary. Because we worked without SMALLab for the first three days of the second residency, the students initially created their dances in a studio. Later they took them into the SMALLab space. After their introduction to SMALLab students were asked to re-conceptualize or reconsider their dances in order to integrate its various capabilities.

B. Art-making in SMALLab

Dance education has well-established documentation for curricular design and assessment methods. Through training, dance students learn to understand the specific elements of the art form, such as time, space and energy. They learn to communicate their intended ideas, verbally and through movement. They improvise, create dances and evaluate their work and the work of others through constructive feedback. However, the integration of technology within the art curriculum is less developed and considerably less progressive. In general, students are guided through lessons that expose them to particular internet environments, video- and photo-editing software, and digital cameras. Though these are valuable skills for art students to acquire, the field of technology has progressed far beyond these simple techniques and interfaces. Today children are surrounded by technology at increasingly earlier and earlier ages. Thus, the technology of SMALLab and other types of advanced systems, attempts to challenge students beyond their technological comfort zones.

When the students started working in SMALLab, the conversations shot to a new level. Once they began working with the available media of SMALLab the creative dynamic blossomed. Choice was expanded and its application to aesthetic intent became exciting for them. We were concerned that the additional options would overwhelm and detract from the original choreographic intent but that was not the case. The students were very
comfortable with what they were doing and seemed to relish much of the possibilities SMALLab offered.

The students maintained journals throughout this residency. We asked them to think and write reflectively about the ideas and experiences they were having. We began each day sharing our journal entries. A sampling of journal topics follows:

Why do people make dances?
What is modern dance?
What is the purpose of language?
What does the word image mean?
What does the image sound like or look like in terms of time, space and energy?
What does interactivity mean?
How does your dance affect the sounds and images in SMALLab?
Does doing your dance in SMALLab change the way you think about your image?

The concept of interactivity is a complex principle, one that is difficult to understand, even for adults. We were quite curious whether the students understood and could apply the principle of interactivity, that they were generating the sounds and graphics through their movement, in their art making. Their journal reflections were crucial in determining this clarity. We found that some students, indeed, understood the principles of the interactive technology of SMALLab. Students also constructively critiqued the work of their classmates, analyzing each other’s choices in terms of sound, graphics and movement to elucidate their intention.

The following are direct quotes from the students’ journals:

‘It’s kinda creepy because the way it marks your steps and movements it feels like someone is tracking you down. And it’s fun because you can go wherever and know exactly the trail you took.’

After more exposure in SMALLab students began to understand the intricacies of the designed interactivity. “I think it was weird and interesting when you would go somewhere in the space a different sound in each corner.”
The students also considered their aesthetic choices based on the capabilities of SMALLab, changing their dances to enhance their interpretation of their intended image through sound.

‘Because when we first started working with the sounds a whole new image of our dances came to my mind.’

‘It affects our dance because once we hear a couple of sounds it gives us some ideas that we could add to our dance but sometimes you think and think and you make changes next thing you know your dance is completely different than what we had before.’

‘In our dance usually when we are LOW we are in a calm situation. And when are HIGH we are in chaotic situation. So when we are HIGH we can put the ball high so the sound can play loud and when we are low we can put the ball low so the sound can be soft.’

‘Well the painting is like a thunderstorm and lots of mixed up noises or music so in our dance we put thunder storm music.’

One reason the students were so clear about what their images looked and sounded like and how they should convey them in their dances was due to the reflective journaling prompted by the teacher’s inquiry. In fact, one student commented that the sounds and graphics of SMALLab made her realize more qualities about her image.

3. Final Critique on Herrera/SMALLab Residencies

Unanswered questions are part of the human experience and an essential presence in learning. Probing into a new subject or territory often yields more questions than answers. Questions can be as meaningful as answers in that they generate further inquiry, opening thought and consciousness into new realms.

The richness of this project lay in the many unknowns and the multiple layers and players involved. There were academics - computer scientists, electrical engineers, educators, dancers, and musicians - involved in this project. And of course, there were the 10 – 12 year old student
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participants from Herrera School. Designing an assessment model that would reflect this broad diversity was challenging. The blending of precision and unpredictability in this project kept us all alert.

The evaluation portion of the project became the responsibility of the education professors and their graduate students who constructed a traditional evaluation instrument. Its inclusion loaned clout and authenticity to a nascent, formative project that risked exclusion from the scholarly community without it. The evaluators for our project were skilled at setting up evaluation instruments but lacked any knowledge of dance or the creative arts. This ‘need’ for validity stimulated many questions among us, such as:

Who is able to evaluate?
Do evaluators need to know the field they are evaluating?
What and whose criteria are used?
What is success?
Can you evaluate art?
What is being measured?
Can meaning be evaluated?

The limitations and boundaries of knowledge described through traditional educational assessment suggest that it can be broken into parts which can in turn be evaluated. By ascribing a value to discreet parts of knowledge, an assessment of knowledge becomes a calculation. Where does the dynamism of content, as experienced within contextual nuance fit? Meaning often exists in the interplay of parts. How are imagination, process, transformation, creativity, meaning and self –discovery situated in an evaluation instrument? These colliding paradigms rose up repeatedly.

Evaluation is an important part of any project. However, it is a fluid and evolving, process requiring balancing and adjusting and should be viewed as a “piece” of a larger whole and not a container for certainty. This project in particular with its blending of precision and unpredictability kept all of us alert to these assessment challenges.

4. Conclusion

The first series of residencies of SMALLab within a public classroom and the development of curriculum for such an environment marked a significant success for the project. The objectives of these experiences were multifold, ranging from the successful installation of SMALLab, itself, from a technical and technological perspective, to the development of a hybrid arts
and technology curriculum that integrated these two disciplines holistically, to
the development of new evaluation and assessment criteria. Nonetheless, there
were many issues that came to the forefront, considerations for improvement
for future residencies of SMALLab in classroom environments.

The innovative design and implementation of immersive, interactive
environments can be exciting though ambitious and daunting. The fall and
spring residencies of SMALLab at the Herrera School of Fine Arts proved to
be exactly that. Embedding an interactive environment into a classroom and
designing a curriculum to specifically integrate technology and art making
were clearly novel. To the authors’ knowledge, little attention has been
devoted to the design of curriculum, evaluation tools and assessment criteria
within interactive spaces. Despite its challenges and weaknesses, this project
proved a success.

Nonetheless, the goal of this paper is to address and question the
creative needs of children in this context. Creative process persistently eludes
“packaging” which keeps it at a conceptual distance, and murky in terms of its
educational value. “Program packaging” has acquired popularity within
American public education. Stamps of approval from remote sources have
become emblematic of quality. Ambiguous entities, such as art, and those
difficult to identify and isolate are pushed aside for the assurance of
quantifiable “educational results” that these programs promise. This is
especially the case in inner city education where the high stakes testing climate
has such a dramatic impact. It is in part for this reason that the digital
choreographic project bore such interesting results. Because interactive, digital
art making was such a new medium, there were few really clear expectations.

We knew we wanted a certain quality of artistic experience but
didn’t know what the steps would look like to accomplish that. We created
guidelines and tried to anticipate the direction of the project, but ultimately, we
were all learning together. This state of openness contributed to an energetic
sense of wonder and excitement. Meaning can’t be orchestrated or rushed and
it can’t be artificial. Rather, it evolves organically in fertile conditions on its
own timetable. Programs must be cultivated if meaning is a desired outcome.

The children who worked in Small lab at Herrera were expressive,
creative and enthusiastic. Inner city children, like others, love technology.
Providing the opportunity to work with state of the art, digital equipment tells
these children that the world of sophisticated technology is one in which their
input is invited and participation valued. Technology is ubiquitous in the
lives of children today – in ways that far exceed those of 20 or 30 years ago.
Picasso said every child is an artist. The children of the 21st century will know
a broadened creative palette. The children involved in this project had their finger briefly on the pulse of future art.

5. Bibliography


6. Author Identification

Harper Piver earned her MFA degree in Dance from Arizona State University in May 2008. She was a research assistant for the Arts, Media and Engineering Program for two years.

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