

## The Value of Technology in Performing Arts Education



Fig. 1. A Northwestern student participating in Multimedia Improvisation (fall quarter 2003).  
Photo: Kathryn Farley.

### Abstract

This paper outlines two different approaches to utilizing computer-based technologies in performance classes at Northwestern University and Ohio State University. In addition to detailing the ways in which the authors employed interactive media tools to instruct specific courses, the work also addresses the larger implications of drawing on technological resources to enhance theatre programs of study. It concludes with a discussion of the ways in which the projects presented might serve as blueprints for a systematic integration of technology into performing arts curriculums. The piece is composed in a form intended to honor the collaborative nature of technology-assisted teaching in the arts.

### CASE STUDY #1: Designing a Technology-Based Production Class at Northwestern (Kathryn's Perspective)

I did not set out to use multimedia instruments in the classes I have instructed at Northwestern University to convey my inner “coolness” to students. In fact, I have always considered myself to be slightly technophobic, or at the very least mechanically-challenged. Rather, the impetus for experimenting with media in an educational capacity emerged, like most things, from personal experience. Specifically, I had observed the integral role technology played in the lives of my students: how they relied on digital instruments to facilitate communication, mediate interaction and generate fun. I hoped that by employing familiar computer-based tools and techniques in an educational setting I would be able to connect with and expand upon their everyday media behaviors. If my ego took a beating in the process of familiarizing myself with electronic objects and processes, so be it.

### Acknowledging the Need for a Partner

Given my limited mechanical background, I recognized that I needed assistance supervising the technical aspects of class- an admission that prompted me to join forces with Dan Zellner, digital theatre practitioner and multimedia specialist in the University Library, to design and instruct the course. I felt Dan was uniquely qualified to co-teach the class as his position afforded him the opportunity to operate and manage a variety of digital equipment for scholarly application. In

addition, he served as artistic director of a Chicago theatre company dedicated to exploring the creative potential of emerging technologies in live performance. Dan's tenure in regional theatre complimented my university production experience, particularly my efforts to adapt and stage non-traditional texts for presentation in various campus venues.

From the onset, Dan and I decided to focus the class on Chicago-style improvisation, a performance tradition indigenous to this city and an art form that encourages a high level of performer/audience interactivity. The course, that we titled Projects in Art and Technology: Multimedia Improvisation, aimed to provide undergraduate students the opportunity to collaboratively conceive, stage and present an original comedic performance that combined digital technologies with improvisational methods, as developed by pioneering educator Viola Spolin and various Second City artists. Supporting this work would be "theatre friendly" technology (meaning mobile, easy to use and able to keep pace with the creative process).

In keeping with our technological aims, we were drawn to improv comedy because of its accessible, adaptable and familiar features, as well as the minimal training it required. Taken together, we anticipated that the technical and improv tools would work in harmony to allow participants to generate new material in a timely manner, with minimal supervision from us.

### **Devising a Plan for Separation of Labor**

The concept of collaborative teaching was novel to both Dan and me. We were intrigued at the possibilities a team approach offered, and, at the same time, a bit daunted at the realities of maintaining equilibrium in the classroom, as well as operational coherence. In the three months of preparation leading up to the course, we considered a number of possible options regarding instruction. After much discussion, we agreed to craft a plan tailored to accommodate our separate interests and areas of expertise. Dan sought to share his technical skills in multimedia presentation, as well as his experiences in sound and set design and other production-related activities. I wanted to work with students on acting and directing tasks. Keeping our interests and desires in mind, we formulated a plan for separation of labor for teaching. Dan would supervise students interested in the technical aspects of production, including the design and assembly of images, sound and set design and other production-related activities. I wanted to work with students on acting and directing tasks. These roles were intended to be flexible, so that each of us could participate equally in class activities, as well as comment on student work product in both the technical and artistic domains. Such a clear division of labor was intended to prohibit stepping on each other's toes in the classroom, as well as to balance our experiences, skills and areas of interest.

### **Assembling a Mobile Stage Apparatus**

After devising a feasible plan of instruction we focused on assembling a production model specifically suited for this type of endeavor. Since our equipment would be stored in a separate location from our classroom, we were forced to confront the challenge of transporting technology to and from the building for each session. Besides being mobile, the equipment had to be easy to assemble and break down as the classroom space was tightly scheduled. Thus, transportation and operational concerns factored into the decision about the types of technologies that could be considered for the class.

Rather than collect instruments piecemeal or start from scratch to build a mobile unit that would contain the instruments, chords and ancillary devices necessary, we pursued a more feasible option by agreeing to use a pre-configured apparatus, as devised by Zellner and members of his performance company. Studio Z's stage apparatus required two people approximately forty-five minutes to assemble and could be broken down in half that time for the purposes of transport. The platform's ease of assembly and delivery would permit us to travel from the storage facility in an adjacent building to our classroom quickly and efficiently.



**Fig. 2. Projection screen placement in Multimedia Improv classroom.**  
**Photo: Kathryn Farley.**

The equipment consisted of the following:

- One InFocus LP350 DLP video projector to display imagery
- A Disney rear-projection screen outfitted for theatre use
- A lap top computer configured for digital theatre (dockable hard drive and dual head video card installed)
- A video projector cart with configurable mirror to cut projector throw distance
- A Boss JS-5 JamStation sequencer to allow for musical accompaniment
- Fender P-250 portable audio system with speaker stands to transmit sound
- Multimedia Presentation Software (such as the Arkaos program) to compile and store imagery on the computer and transmit the imagery via the projector onto the screen
- Digital scenery archive/object gallery

We selected the individual pieces of equipment to insure that students would have multiple options regarding the creation, delivery and display of digital imagery. The imagery would serve important scenographic functions in the production we planned to present to the public, helping to place actors in certain locations and time periods as dictated by the script. Further, none of the individual pieces of equipment are difficult to manage or operate. In fact, most of the instruments would already be familiar to students who utilized software programs such as Photoshop or downloaded music from the Internet.

Because the equipment was heavy and cumbersome, Dan constructed three separate mobile units to transport and house the media in our classroom. The units were self-contained and durable. They could also be easily repositioned within the television studio space that served as our classroom.

In addition to formulating a viable plan for hardware, Dan suggested using a commercial software product that would assist students with authoring processes. He had experimented with the software, called Arkaos, to produce multimedia performance works for his theatre company, and found the program to be easily manageable and accessible to a cross-section of users. Further, the software was commercially available at a reasonable price and offered training and support at no additional cost. A forty-five minute self-guided tutorial session provided students the skills necessary to begin creating, editing and storing visual content for the show.

### **Assessing Student Skills and Interests**

In order to structure lesson plans for each class session, Dan and I needed to assess the skills and backgrounds of the fifteen student participants. To do this, on the first day of class we asked students to fill out a questionnaire designed to uncover computer abilities and personal histories in both computer usage and/or performance. The survey provided Dan and I with a clear understanding of the background and interests of each participant, as well as the skill level of the class as a whole. The information derived from the questionnaire would help us to determine how to divide the class (among the technology and performance concentrations), as well as how to assign responsibilities based on talents and interests.

The results of the questionnaire revealed the group had a great interest in and at least some experience using the computer as a personal tool of expression. All fifteen participants, for example, remarked that they were familiar with assembling a play list of songs for mobile audio devices and composing collages of imagery downloaded from the Internet. The skill involved with re-configuring media from one format to another would prove invaluable to class operations, as would the students' ability to perform many media-related tasks simultaneously. Evidently, course participants were comfortable using media in a number of different ways.

In addition, the questionnaires revealed that the technical and performance concentrations would be fairly evenly divided, with a few students interested in participating in both groups.

### **Student Ownership of Learning Tools**

Once our plans were implemented in a classroom setting, we found that students employed technological tools in ways that mirrored their everyday media behaviors. Specifically, they drew on digital resources to generate raw material for production, sort and manage information, facilitate communicate and document their individual processes of creation.

First and foremost, students utilized digital tools to craft the visual and sonic components of a projected text for performance. More than merely illustrating the action on stage or locating actors in a specific time and place, computer-generated imagery served a vital role in helping tell the story of the play. In addition, they employed technical tools to produce an original score for the show, and to store, manage and retrieve visual cues for its presentation on stage.

Secondly, participants also used equipment to exchange ideas, generate discussion and stay in close contact with Dan and myself outside of class. Before the first session, we established a Blackboard site, a course management program supported by Northwestern Information Technology. The site allowed us to communicate electronically with participants in order to announce events, confirm assignments, distribute readings and administer quizzes. In addition, students set up an instant messaging network so that an individual member of a working unit could share ideas pertaining to design and production with the group as a whole.

Third, students drew on technological resources to document the different stages of the play's development. They assisted in videotaping and photographing class activities, rehearsal sessions and group meetings outside of class, and decided to create a separate production Web site that they agreed to update on a weekly basis. The course site, containing production photos, participant and instructor biographies and videos of rehearsals, was hosted by Northwestern University Library and managed by a participant who had expressed an interest in Web design on his assessment questionnaire. Throughout the course, the Blackboard and production Web site sites operated as digital extensions of our classroom- communal domains maintained by student interest and effort.

### **Findings from Class**

From the perspective of teaching, Dan and I found that specific skills can be honed by implementing technological tools in a studio-based performance class. These include: abilities related to multimedia theatre production (such as mastery of the composition of a projected text and exposure to non-traditional approaches to scriptwriting), general performance skills (meaning acting, character development and directing) and team-building proficiency (having to do with ensemble methods of creation and presentation).

We also discovered that technology helped pave the way for more equitable classroom operations, greater efficiency and unity among members of working group units and a more student-centered style of instruction.

In terms of enhancing learning opportunities in art production, a review of responses offered by students to questions on the teaching evaluation form provides evidence that media devices afforded participants the means of assuming ownership of authoring tasks, as well as answering many of their communication, operation and documentation needs. Students expressed the greatest enthusiasm for combining different instruments and processes, allowing them to experiment with a variety of digital resources and techniques in a real-world production setting. They also commented that technical instruments enabled them to generate content in a timely manner and collaborate more effectively with each other during class and between sessions.

Perhaps most important, students remarked the class was enjoyable, adding credence to the notion that learning can (and should be) fun. As one participant offered:

Thank you guys so much for such an educational and experimental and fun and meaningful class. You've helped me ask what the future of theater is and invited me to experience what it may be like. Thanks a lot!

In the end, Dan and I were gratified that our efforts to devise a manageable design and operational structure for the class resulted in an enthusiastic reception by students.

**CASE STUDY #2: Applying Technology to a Large-Scale Performing Arts Course at Ohio State University**  
**(Katie's Thoughts)**



**Fig. 3. Various posed characters from the creation phase of the Virtual Theatre Project at The Ohio State University, Department of Theatre and Advanced Computing Center for the Arts and Design (ACCAD) Screenshots: Katie Whitlock**

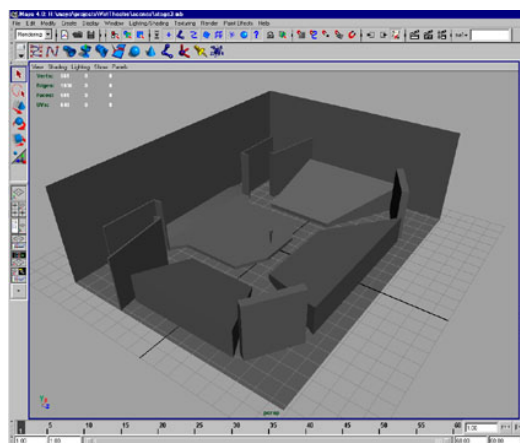
My approach to utilizing technology is somewhat different from Kathryn's. I have always been technologically inclined in my work, stemming from both my past as a sound designer and my hidden passion for video games. For me the question of using technology seems moot; it is evermore appropriate for capturing student interest while making theatre seem vital and current. Much like Kathryn, I have noticed student dependency on telecommunications and the proliferation of technological gadgets in our classrooms and audiences. When I first considered the insertion of technology into a large-scale performing arts course, I drew from my experience of technology making my aural designs accessible to directors, performers, and other designers. This in turn led to an exploration of how technology could be employed to make design concepts and process more accessible to theatre students with varying levels of experience. My



opportunity to investigate this use of technology in the classroom on a large scale came through a project at The Ohio State University.



**Fig. 4. The Roy Bowen Theatre at The Ohio State University from stage left perspective**  
Photo: Katie Whitlock



**Fig. 5 The initial model of the Roy Bowen Theatre as built in Maya**  
Screenshot: Katie Whitlock

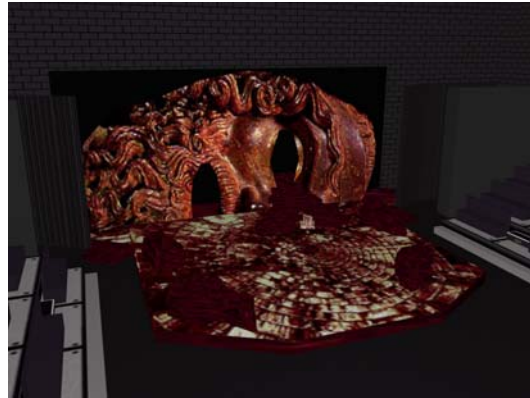
While at OSU as a doctoral candidate, I became involved in a grant project to develop a virtual theatre which would potentially serve as a teaching tool. The impetus for the grant was a genuine wish to integrate innovative technologies into an existing large-scale course, Introduction to Theatre. The course is a large lecture with small recitation sections that serves over 1000 students per quarter. The class is focused on introducing students to the process of creating theatre and working in a collaborative framework. The use of technology is becoming more and more integral for classroom management for these large scale classes, but our department hoped to find a new means of teaching theatre beyond standard discussion boards and websites. Starting in the fall of 2000, I was one of the lead investigators, developing content and interface possibilities for the project. The development team was created through collaboration between the Department of Theatre and the Advanced Computing Center for the Arts and Design (ACCAD) connecting theatre students with animators and programmers. In its first year, the project was focused on creating a virtual model of the Roy Bowen Theatre (a conventional black box space) and determining what variables could be introduced and then controlled by the user. In its second year, the project expanded to include the creation of three-dimensional avatars as ‘actors’ driven by motion-capture data clips. The finished product was then available online for integration with various classes within the theatre department.

### **Rewiring Theatre: Interface and Terminology Trauma**

With the initial focus of the project, the challenge became effectively generating an interface that would provide a user with little to no knowledge of the theatre an accessible and engaging experience while also remaining interesting to a more educated user. (The long-term goal for this project expanded to encompass departmental design and directing classes as well as introductory level coursework.) Deconstructing the design process into components of choice became my plan of attack. In working with the computer programmers on the team it became apparent that the complexity of live performance was harder to compartmentalize than we had first supposed. The literal nature of computer programming did not lend itself to discussions on design while my theatrical background left me ill-prepared to consider the precise, numerical necessities of

programming for the web. A compromise was needed to allow the project to go forward – and that compromise was the very essence of what we were trying to create pedagogically.

The natural starting point was the space itself. After a crash course in animation and modeling, I constructed a scale three-dimensional model using Maya and from that point began exploring possible scenic elements. Here the pedagogical approach to the project served to define the work, necessitating complete designs for newcomers to see an example of theatrical design in addition to component pieces that would allow more advanced students to explore possibilities of space and shape in a virtual theatrical environment.



**Fig. 6. A set design modeled for *Oedipus Rex*. This stage was one of the preset versions, suggesting a complete set design rather than a building block approach available to more advanced students. Screenshot: Katie Whitlock**

With the space in process, the possibility of figures was raised. This was another natural leap, supposing that the human actor would be lacking but replaced in a sense by flat figures providing a sense of costume and period. This was then followed by the most problematic component of this project – lighting. Stage lighting is one of the more difficult design areas to explain to students and as such determining the best mode to handle it was uniquely problematic. Also, lighting in a virtual space is quite different than a physical space as shadows and change are more difficult to moderate and render. The end solution was a second interface that allowed the user distinct control over six lights with choices of color, angle, and intensity.



**Fig. 7. The initial interface from the first year of the grant. This version was focused on design**



**aspects but was changed later to reflect user comments and to integrate the directing/blocking portion. Screenshot: Katie Whitlock**

Throughout all the development, we as a team were very cognizant of continually testing our choices on various individuals from a variety of backgrounds and knowledge bases to ascertain the success and clarity of design. In addition we sought a reliable web-program to support the running of the program. The end result of year one was a working model that was created in Maya and then exported to a VRML file which then ran in Shout 3D, creating a java-based application which could run on virtually any computer utilizing web access.

With the program operational, the next phase of challenge was developing curriculum that could truly utilize the tool. The initial ‘coolness’ of the project was lost when the struggle to ascertain its capacity for generating gradable material began. The early exercises focused on having students explore the tool and write about what they experienced in terms of usability and interest, with set questions that considered whether or not the tool was viable due to its reliance on technology. The results were interesting and reflected a student interest in technology but the inability to maintain focus on the theatrical, instead focusing on the gimmick of technology.

With the first year complete and with a strong response from a varied student population, the project went into its second year of development. In this phase, the team focused on further pushing the deconstruction of performance to develop another set of tools. This new facet allowed users to select a short script and then cast it from a limited pool of 3D avatars, finally blocking the scene and seeing it played back. Rather than the technologically driven live performance resulting from Kathryn’s work, our version generated short online performance moments that were ephemeral – limited to the user’s experience within that particular moment.

The second year of development was spent gathering short improvised scripts along with creating models for the ‘actors’ and finally capturing and cleaning various motion clips to once again provide ‘building blocks’ for the user to create virtual theatre. I served as primary content gatherer and creator working in conjunction with a team of computer programmers to create the final project within our existing web-based Bowen theatre.

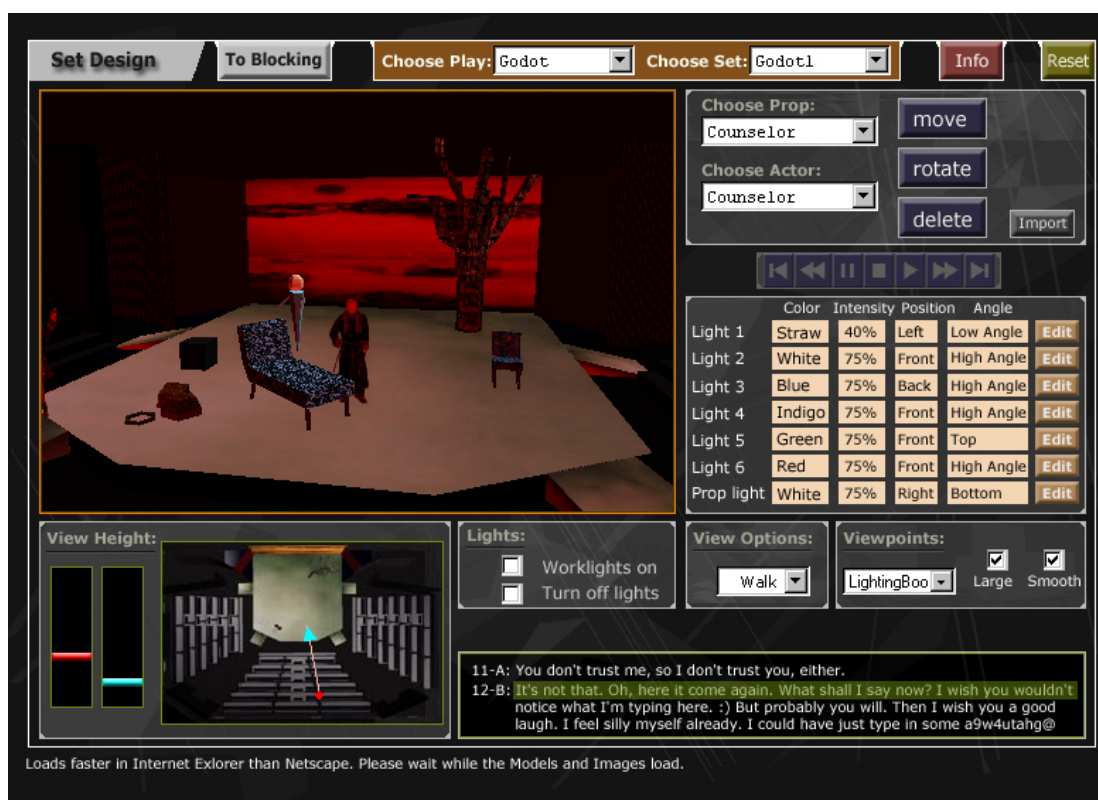


**Fig. 8. An original rendering by costume designer Dennis Parker for *The Beggar's Opera* Screenshot: Katie Whitlock**



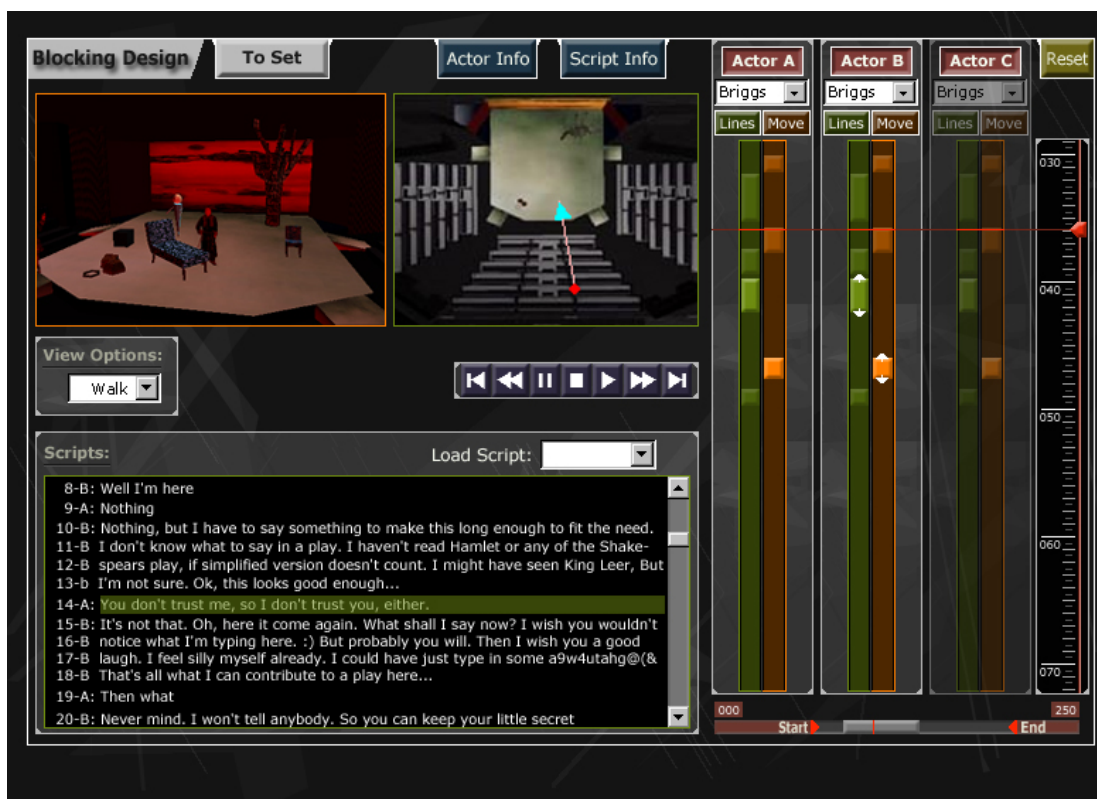
**Fig. 9. The resulting avatar in a low polygon form which would run adequately on the system. Screenshot: Katie Whitlock**

By drawing from existing costume designs created by faculty within the Department of Theatre, I was able to develop a varied range of costumed avatars that would serve as the actor pool for the project. The foray into motion capture allowed us to create a small library of walk cycles, bows, deaths, etc. that we felt would entice students to engage with the program and expand their knowledge of performance process. (We had several drunken death scenes that became a popular favorite amongst majors and non-majors alike!) However, the problem of interface once again reared its ugly head as I attempted to discern how I would ‘direct’ without being able to truly interact with performers. On top of that, how could a student with little to no knowledge intuitively grasp the concept of theatrical blocking and then replicate it online? The end result is a relatively complex screen that was forced to assume more knowledge than the initial project had intended.



**Fig. 10.** The new design interface with an improved lighting design interface and a sleeker look. The set is a ‘designed’ space but various props and scenic pieces have been imported to change the space. By using the tabs at the top left of the screen, the user could switch to the blocking interface pictured in Fig. 11.  
 Screenshot: Katie Whitlock

The screenshot above is the current rendition of the ‘design’ interface which is commonly referred to as set design. From the image, you can see various components made available to the students – viewpoint, lighting, set, props. The theatre can be used from a specific access point such as a particular script with multiple preexisting designs or it can be started from a black stage with bits and pieces added. The viewpoint section allows students to see the stage from multiple angles and then to explore the space in wither a walk or fly mode. The shift into ‘blocking’ mode allows the student to switch roles from designer to director, using the designed set as the staging local for short scripts. The interface in Fig. 11 shows the arrangement chosen to best convey the variables that influence the director in his/her process.



**Fig. 11. The new blocking interface which had to accommodate script, ground plan, and actor paths/motion. Also a timeline to indicate length of various clips and to allow for a smoother integration of text and movement. Once the scene is ‘blocked’ the student could switch back the set window and watch the end product in a larger screen as well as making lighting adjustments. Screenshot: Katie Whitlock**

### **Problems with Integration & Assessment**

When the project was completed after two long years of work, it was made available to the theatre department. More specifically, the need for integrating the virtual theatre into the introductory level course became a pedagogical priority. Yet there were snags in the process due to the fact that I as the primary content generator had built the object with specific goals in mind but I was not the instructor of the course. Because I come from a design and directing background, my approach was based on a textual understanding of certain scripts that had then been designed for the virtual theatre. Unfortunately, the quarter of integration (Fall 2002) had none of those texts in the reading repertoire for the course making that connection impossible to draw upon. In addition, the technology still seemed ‘new’ – especially to the graduate students who had little to no experience in teaching with technological devices.

As a result, the first use of the technology was relatively unsuccessful connecting students to the material. The use of technology seemed forced and more emphasis was placed on the fact that the department had received the grants than on the project as a learning environment. The successes with the project came in smaller courses that had more leeway in their reading, allowing for adoption of one or more texts so the sense of design was carried through. Also, the smaller classes were able to have more guidance on the use of the object and more chance of instruction to introduce the virtual theatre as a learning opportunity rather than a chore for grant funding.

With the need for better integration in mind, the department backed away from the project and focused on developing a course infrastructure that utilized the online course support for OSU, Web CT. With that focus, the virtual theatre was left in place but it lacked a defined use plan. I also fell away from the project, becoming admittedly tired of the continual struggle to ‘make it work’ after 2 ½ years.

### **The Change of Attitude**

Last year (2004-05) I was hired by the Department of Theatre to revamp the course and push technology into a more solid relationship with the course. Returning to the virtual theatre but this time from the instructor position, I was reenergized to develop a better means of using the design and blocking interface. The course was shifted so that being technologically engaged was a weekly, if not daily, part of the course. This shifted the student perspective from thinking that we, the instructors, were not technologically engaged. Instead, the virtual theatre was a part of discussion and exercises connected directly to the student experience in recitation. I also lectured with the tool to show examples of particular design choices and how it might be useful to use such a tool to test ideas and/or refine one’s understanding of design and directing.

Rather than thinking of the technology as a one-time assignment (gimmick) we explored to possibility of having multiple responses in the online environment related to the various sets, lights, and scenes that the students designed/directed. Although students could not save their work, they could begin to communicate their experiences and what they saw artistically as options for the designs. By having the responses via discussion boards and/or short writing quizzes online, the students were engaging on a virtual level continually in the process.

The best integration was due to the commitment of the graduate teaching assistants. By addressing the virtual theatre as a useful tool and by treating it as another springboard for discussion, the students were more prone to actively engage with it. In addition, the students used the virtual theatre as a starting point in developing design ideas for their creative projects – a live performance component of the course. Over the course of the year students began exploring the tool – sometimes for the entertainment value provided, but mainly to better understand the theatrical process. Our original intent had been matched.

### **Findings from Class**

In having worked with the project in varying capacities over a multi-year span, the two most common questions I encounter are why use the technology and how the students adjust/develop in relation to such teaching methods. Each answers the other: the students have engaged more fully with the material while the class itself has grown in complexity and dimension with the addition of technological components. The use of technology has allowed a more complete understanding of the whole theatrical process, making design (an oft misunderstood process) tangible for those who are not artistically inclined. Now rather than simply explaining in a lecture how one might consider light, color, texture, etc., the students have an actual tool that allows them to make such choices, albeit on a limited scale, with direct results. In adding technology, performance has become about more than the actor – the most recognizable and most easily displayed aspect of performance. With the advent of video games like *The Movies* this type of tool is an ideal blend of education and entertainment. As students become more

technologically savvy, this type of interface allows a cross between game and class, providing another method of engaging students.

Students who shuddered at the thought of traditional paint and paper were surprised and intrigued at how they could have control over a design simply by working in an online environment. Several students also came to appreciate the depth of choices at work in live performance. Many expressed shock upon realizing how much design could effect a production as they spent time exploring the virtual theatre. What was revealed in the discussions and writings done by the students using the tool was that they almost always followed a similar pattern in approaching the virtual theatre. Most opened the tool with trepidation as technophobia still remains prevalent in our society, especially in education. Once in, the immediate impulse was to create something outlandish and funny or violent and scary. Sets which had people standing in unlikely places, stages filled with purple light, etc. were the base element of the student experience. Actors were quickly directed to either stagger drunkenly around the stage or to die repeatedly. Yet many had the general reaction of recognizing that these simple choices could quickly become complex. The majority of students remarked on how much lighting was an element that they had never understood prior to this type of engagement, realizing that in changing just six lights they could achieve multiple ‘looks’ onstage. When comparing this to the hundreds of instruments used on concert lighting they experienced a new respect and interest in the design aspect. Suddenly the students were aware of choices being made in the performance world that they had never acknowledged prior to this experience.

Once past this initial recognition, several students became tyrannical directors, employing the motion captured actors to jump, walk, stagger, and die on command. One student wrote that he “could see Tartuffe leaping up and down with glee shouting ‘Show me the Money!’ as he fleeced Orgon” in his Jerry Maguire inspired production. Other students also spoke of becoming aware of the difficulties that a director faces when attempting to block performers. Regardless of the virtual nature of the performers, the students found that directing their small works made them cognizant of the problems discussed in the lectures, reinforcing and expanding on the class beyond the lecture setting.

### **Conclusions from the Two Case Studies: The Educational benefits of Technology-Assisted Teaching in the Arts**

Our collective experiences utilizing technology in theatre history and performance production classrooms indicate that multimedia tools and techniques provide students a wide range of expressive options, a strong sense of community and greater engagement in learning processes. For many students, the world of media is a more comfortable starting point than a traditional rehearsal hall, drafting studio or classroom environment. Technology is so interwoven into our world that it can be seen as making concepts of design and collaboration far more accessible than has traditionally been the case in large-scale classes. It also has the attraction of being labeled as cool or as entertainment which allows for the educational engagement to become ‘fun’, having the appearance of being play rather than work.

In addition, students become accustomed to thinking of theatre as a vital part of the mediated community rather than being limited to a physical reality. They begin to recognize how media influences their understanding of the world around them as well, suggesting a more connected,

and knowledgeable populace. The introduction of technology demystifies the design and directing processes, making theatre students more adaptable to modern performance trends, accelerating and improving our training practices. Students also become aware of how the media of today has roots within the traditions of theatre, encouraging them to make contextual observations about film, television, gaming, etc. as influenced by live performance.

The first case study outlined above focuses on the derivation and implementation of course design. This section of the paper is meant to highlight the importance of devising a strategic plan to determine the structure, operation and technical configuration of a media-based course during its inception stage of development. Thinking through the details of such a plan will encourage an instructor to consider his/her view of the purpose of technology in education, and to find a way to implement that vision in a classroom setting. Also, vigorous pre-planning will help to clarify the ways students are expected to engage with media tools and processes in a specific course, and identify the skills that can be honed by their efforts.

The second set of experiences concentrates on the creation and integration of a particular tool designed for 'updating' a curriculum. The use of technology in this instance- grounded in educational exploration- both in the creation of the virtual theatre and the subsequent restructuring of the courses that utilize the piece. The world of media is best for exploring design and direction, giving students an opportunity to test and try choices, encouraging a liberation from the traditional focus on always being 'right'. Instead, by exploring flexibility the virtual theatre can be considered as a model for teaching complex processes in modular fashion. Students can try a variety of choices with no penalty. The only requirement made by the instructors is then located in supporting individual selections, becoming cognizant of how and why rather than simply answering to answer.

The lessons learned from the second experience point to the ways pedagogy must be complimentary to the design of a course in order to achieve success in the classroom.

### **The Systematic Integration of Media into Theatre-based Programs of Study**

As technology is still somewhat new to the performing arts academy, the need for careful consideration must be acknowledged and articulated in any course development.

In terms of initiating a systemic integration of new media tools into new or existing theatre-based curriculums, the classes profiled above might be thought of as single steps in a much larger, more involved effort to embrace media as an integral component of creativity and cognition in the modern world. The courses can be viewed as blueprints from which to build other classes that expand upon a basic production model.

To begin thinking about how to build new models of teaching in the performing arts, as well as implement the changes represented by our individual initiatives, the following issues need to be addressed or further investigated:

#### 1. Adjustments in Theatre Studies Curriculums

It would be simplistic to suggest that a greater amount of technology-themed courses be included in theatre studies curriculums across the country, at every level of instruction. The fact is that



there are presently many courses dealing with media integration issues being offered by performing arts departments at universities around the world. The problem is that such courses are often relegated to design-related subjects (such as set, costume, lighting and sound construction and operation). Training in specialized software has also been featured in stage management and technical directing classes. These courses are aimed at students seeking expertise in a certain area of design or production, though, rather than at a wide spectrum of participants pursuing less specialized interests in theatre/performance. In addition, this technological skill set is at odds with a more traditional training, forcing faculties to decide one direction or the other in developing curriculum and resources.

We are asking that members of curricular review committees at theatre departments at colleges and universities worldwide to begin to consider the ways in which the inclusion of media elements might enhance existing classes that serve large constituencies. Rather than calling for wide-spread reform, then, we are calling on department personnel to evaluate technological tools and techniques in relation to curriculums already in place, especially those courses attracting a wide variety and number participants, most frequently offered at the introductory level. Instructors of introductory theatre classes could incorporate media in a number of different ways, as both of the above-cited examples indicate. Our findings indicate, though, that the most effective technologies for teaching contain accessible, familiar and user-friendly features-attributes that allow students to assume a greater leadership role in teaching/learning processes.

Through our experiments in teaching, we have discovered that technological tools and techniques afford entry level students a fresh and timely approach to examining performance practices as a social processes shaped by twenty-first-century cultural forces. In other words, we could argue that technology should be mandatory in theatre classrooms due to its prevalence in everyday life. To this end, media instruments represent a wealth of possibilities to instructors of performing arts disciplines such as theatre, in attempting to connect with, excite and engage students in contemporary methods and instruments of analysis.

Once a decision has been made to include media in a class, the next step is for the instructor is to consider which instruments would be most useful, effective or appropriate. We have found that one of most important factors influencing decisions regarding equipment should center on determining the purpose of the instrument vis-à-vis the subject matter. In what ways does the technology serve the content of a class, as well as the personal goals of its instructor? How is the tool going to be used by the teacher and the students? What are the instructor's expectations for students regarding media usage? How might those expectations be relayed in curricular materials (such as the course description and statement of grading and assessment procedures)?

## 2. Budgetary Issues

The other major factor determining equipment selection pertains to cost. State-of-the-art or even second-hand technologies tend to be expensive, sometimes prohibitively so. In addition to hardware allocations, the purchase of software and ancillary devices must also be considered. Further, the labor and supplies needed to modify existing spaces to handle technologies are additional costs that need to be assessed and decided upon.

There is no doubt that obtaining media devices in a piecemeal fashion can be especially pricey, but there are ways to combat and streamline costs if equipment is acquired in a more comprehensive manner. One idea is to adopt a mobile stage apparatus—one able to house and transport instruments for set up in any type of classroom space—that is available for sale by companies specializing in multimedia production. An example of such a system is Dan Zellner's portable stage as detailed in the first case study above.

The upside of using a mobile production apparatus is that equipment is temporarily placed in classroom, and no permanent changes in infrastructure are needed. Companies such as Da-Lite (offering portable screens and other presentation products) and InFocus (for purchase of video projectors) are a good place to begin gathering information about comprehensive mobile production models currently available on the market. Contact information about these companies is included in the reference section at the end of the paper.

The other alternative is partnerships with other campus entities such as occurred at Ohio State, allowing the sciences to find ways to integrate with the arts. This approach often uses existing materials but in new ways envisioned by artists. Shared projects are often good for obtaining initial materials and staff although the maintenance issues become more prevalent in this model. In addition, transdisciplinary projects are about exploration and allow for the problems that inevitably occur while integrating technology into a curriculum – existing or new.

In terms of facility requirements, other than enough space to place instruments in the classroom, ample storage is needed (preferable a space which can be locked and monitored by the instructor between sessions). There is nothing more frustrating to a teacher than finding equipment damaged or tampered with because it was left out in the open, rather than properly secured in a storage room.

Locating the funds to purchase new equipment is often challenging at best. If departmental budgets do not allow for technology allocations, the best place to inquire about the possibility of obtaining media tools for classroom teaching is the Office of the Provost, Deans and similar high-ranking administrative authorities who possess the ability to set policy and determine allocations on a project-by-project basis. Recently, many Provosts and Deans have begun to offer special programs promoting experimentation with technology in the classroom, or fund initiatives targeted at integrating media into courses offered by a department, discipline or area of study. Both classes described above were funded at least in part by special programs devised by high-ranking administrators.

It goes without saying that budgetary matters, similar to adjustments in curriculum, require long-term planning and careful evaluation by all members of a department, not just participants in specialized committees.

### 3. Support Staff Needs

For the most part, instructors who have pioneered technological usage in theatre/performance classrooms have managed to handle set-up, trouble-shooting and maintenance procedures without the assistance of technical personnel. Very few theatre programs offer support or

services to assist teachers in operating technological resources before/during/after class. Technical assistance would be beneficial, but at this point it is very unlikely.

In terms of available assistance, we recommend that teachers involve students in set-up, break-down and storage procedures, and make participation in these tasks count towards the final grade for a class. Not surprisingly, deeming equipment-related responsibilities to be mandatory (and key to determining a student's final grade) will increase the likelihood that instruments will be well-maintained between sessions and competently handled during class.

The other resources necessitated by these types of endeavors can include skilled workers to generate and maintain the content as with the virtual theatre. In that instance, the theatre arm of the team generated content while the sciences aided in developing and implementing the realized project. This type of work is often made easier by a team approach combining knowledge from multiple fields to accommodate technical and educational needs.

#### 4. Informational Resources

A number of theatre organizations and professional associations have amassed and distributed information regarding technology-assisted teaching in the performing arts. Foremost among them is the Association for Theatre in Higher Education (ATHE), an entity that has assembled a group of technology and performance theorists/practitioners to form "The Electronic Technology Committee" (the association's Web site address is provided in the reference section below). According to ATHE's Strategic Plan for 2005-2009, the purpose of the committee is to "Continue to identify and promote the development of new teaching tools of use to theatre teachers, and bring them to the attention of the membership"(9). Details about new instructional technologies are made available by at the annual national conference and via the organization's newsletter, published quarterly.

University libraries and multimedia learning centers are other valuable sources of information about technology integration resources and services on campus, as are professors and instructors who have developed courses containing media elements in some capacity.

How likely are the changes outlined above to happen in theatre programs of study? Only time will tell. At this early stage of development, new models of teaching are being introduced by individual instructors who are committed to finding innovative ways of engaging students in modern tools and methods of discovery. In order to enact long-lasting change, directors of theatre departments must be willing to take the steps necessary to employ and support proactive instructors who are relatively fearless in their commitment to using technology in classroom settings. Formulating a well-conceived and carefully considered plan of action that has been agreed upon by all members of a department represents an important first step in the process.

In sum, the findings of both authors suggest that technology is most valuable to instructors and students of the performing arts in expanding the range of tools available for exploring theatre history, practice and pedagogy from a contemporary vantage point. Ultimately, the teaching methods described in this work, if implemented on the programmatic level, would help to create a new vision of what theatre educators can accomplish with digital technologies in a variety of

academic settings, as well as provide the foundation for establishing curriculums and programs of study that meet the interests, needs and abilities of a new generation of learners.



**Fig. 12. *Waiting for Godot* – a virtual design by Katie Whitlock. Screenshot: Katie Whitlock**

### **References**

The paper refers to a number of Web sites, cultural groups and electronic resources. Following are links to all of them:

**Association for Theatre in Higher Education**

<http://www.athe.org>

**Da-Lite Screen Company**

<http://www.da-lite.com>

**InFocus Corporation**

<http://www.infocus.com>

**Northwestern University's Department of Performance Studies**

<http://www.communication.northwestern.edu/performancestudies>

**Multimedia Improvisation Class (Student-Initiated Site)**

<http://www.depot.northwestern.edu/Library/improv/>

**Ohio State University Department of Theatre**

<http://theatre.osu.edu>

**Ohio State University Advanced Computing Center for the Arts and Design**

<http://accad.osu.edu>

**Second City Theatre**

<http://www.secondcity.com>

**Studio Z Theatre of Chicago**

<http://www.studioz.org>

**Viola Spolin**

<http://www.spolin.com>

**The Virtual Theatre Project**

<http://accad.osu.edu/VT/>

**Biographies of Authors**

**Kathryn Farley**

Kathryn Farley is a doctoral candidate in the Department of Performance Studies at Northwestern University. Portions of this paper were extracted from her dissertation, Teaching Performance in the Digital Age: Computerized Technologies, Improvisational Play Techniques and Interactive Learning Processes. At Northwestern she has taught undergraduate courses exploring the performance of contemporary drama, the adaptation of fiction and the integration of technology into live theatre. Kathryn's research on the technology and theatre production has been published in such diverse entities as Leonardo Electronic Almanac, Theatre Journal and Crossings: Electronic Journal of Art and Technology. In 2006 she received a Researcher-in-Residence grant from the Daniel Langlois Foundation of Montreal, Canada to examine the personal archives of Sonia Landy Sheridan, a pioneering technological arts educator. Kathryn's multimedia portfolio can be found at <http://www.kathrynfarley.org>.

**Katie Whitlock**

Katie Whitlock is currently an assistant professor at the University of Florida School of Theatre and Dance specializing in sound and multimedia. In 2004 she completed her doctoral studies at The Ohio State University and her dissertation, *Theatre and the Video Game: Beauty and the Beast* dealt with connections between performance and video games. She also has an MFA in theatrical design from the University of Memphis and a BFA in stage and arts management from the University of Arizona. Her research on technology and performance has been presented in a wide range of venues from the Popular Culture Association to the Mid-America Theatre Conference to the International Federation for Theatre Research. She is currently designing several shows at the University of Florida and also serving as media director for the touring production of *Anytown* by the dance company Shapiro & Smith.