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Electronic copies in ".doc" and ".pdf" formats can be found at:
http://www.people.virginia.edu/~mr2xk/research.html

I. Project Title and Summary Description (about 100 words)

This information will be used as an "executive summary" in describing the TTI project in documents such as the web site.

Innovative Sound Design for Dramatic Production

Teaching sound design for the theatre requires that students experience the entire sound design process, from inception of an idea to presentation in the theatre. DRAM 264 or Sound Design Studio, soon to be changed to DRAM 364, is currently offered in the only Macintosh-based ITC classroom on campus which is located in Wilson Hall, Room 306. I have identified four major deficiencies with this as an effective and functional classroom for sound design instruction: lack of reliable and professional audio recording capabilities; limited sound playback equipment other than headphones; a lack of flexibility for immediately incorporating new advances in equipment and software; *no visibility of the greater theatrical process for the students*. These issues are a result of the current multi-disciplinary use of the space. Because of these limitations related to the technology-based field of sound design, undergraduates experience only facets of the process, and instruction primarily focuses on creation of ideas rather than on the entire process, including implementation and presentation of those ideas in the theatre. To effectively teach theatre sound design, a marriage of pioneering artistry and innovative technology must be explored.

DRAM 364 is positioned to achieve excellence. In order to accomplish this evolution, the course needs to be taught in a dedicated environment of sound technology, which should be located in the Drama building where it can be interfaced with existing theatre sound equipment. The technologies requested in the proposal will allow me to take groups of undergraduates on a meaningful and instructional journey through the entire process of sound design. The expected outcomes include: improved student artistry, mastery of the entire process, and increased visibility of the entire dramatic experience for the students.

II. Innovative Pedagogical Aims of Project (Three page limit)

Please explain how your project will apply technology to enhance or replace existing methodologies for greater over-all teaching effectiveness. Is there existing research that indicates the effectiveness of this approach? What do you regard as the long-term improvements in teaching that will result from your project? Are there ways your fellowship can impact courses other than the one for which your project is designed? Is this approach new in your field, new to UVa or just emerging due to some recent technological innovation?

Theatrical sound design is the most recent addition to the roster of theatre arts. Its artisans reveal their work to an audience by relying on emerging technology. In fact, the role of the sound

designer has only recently sprung from innovations in technology that facilitate the addition of complex soundscapes to theatrical productions. Not only do sound designers require technology as part of their process, much of the art depends on inventive use of existing technologies related to sound. Universities similar to the University of Virginia are beginning to add sound designers to their drama faculty. Our University is poised to be at the forefront of teaching in this field by presenting unique expertise in sound design through innovative use of technology.

The idea and role of "Sound Designer" defy a simple explanation because the title and function are subject to the context for which they are used. In film, the sound designer typically is responsible for recreating the sounds of reality or for creating new sonic environments. The sound designer for film is an artist with knowledge of recording and sound mixing technologies. Other sound designers primarily study the physics of sound and are concerned with engineering the acoustic qualities of architecture. Some sound designers are primarily electrical engineers and are responsible for designing quality sound systems. The sound designer for theatre must have a firm understanding of all these ideas. The theatre sound designer is responsible for the creation and/or manipulation of sonic environments and music to accompany a play. However, sound design for the theatre often requires experience with sound equipment specifications and installation, knowledge of the physics of sound, and expertise in the recording arts.

The main pedagogical goal of this proposal is to empower the student by providing an organic learning environment- a flexible solution-based experience composed of a specific set of tools. These tools should be fairly easy to master and so not impede student learning, and be malleable enough to allow instruction to flex with the developing interests of the student. In the Wilson lab, we are limited by lack of quality sound input and output, and by lack of immediate access to the theatre sound systems installed in our facilities. Potential for comprehending the complete process of sound design is currently truncated because students can only be involved in one narrow, preliminary aspect of the design process. And, they are unable to apply, synthesize, and evaluate their work in actual theatrical environments.

In DRAM 364, class activities are rooted in the student-driven experience. We explore the subject through "doing" rather than "talking about doing." At the beginning of the semester and after a brief overview, students quickly move to the computers to begin student-driven projects.

The source material for these projects is an eclectic compact disc collection of sounds recorded by professional sound designers. I have devised class projects requiring the synthesis of this prerecorded material into original works. The students begin in the realistic realm by using the software and sound effects to recreate an actual environment. This type of project introduces the craft of layering prerecorded sounds, in a similar fashion to collage in visual art. As students begin to feel more comfortable with the process, they quickly become interested in capturing their own sounds to realize their ideas. *My first pedagogical objective is to teach the process of recording by utilizing emerging technologies in digital recording.*

As the semester proceeds, subsequent projects become more abstract. I ask the students to create a "sonic metaphor" representing a particular piece of visual art. This type of exercise invites a more stylized and creative approach to design. We have been using the prerecorded material for this project also, and the current experience has proven limiting. *A second objective is to*

incorporate the Musical Instrument Digital Interface (MIDI) protocol with innovative software synthesis and sampling to teach students how to create new and original sound environments and music. The MIDI protocol has also become a standard method for automating sound and lighting technology for live theatrical performance.

Beginning sound designers must have the ability to listen critically to their sound mixes on a variety of sound systems in comparison to the system being used to create the design. This exercise develops keen listening skills and the ability to determine in advance how other sound systems and equipment will potentially "color" a sonic creation. As a part of sound class, we should have the ability to listen to and compare student work as a group on a variety of sound systems in a variety of acoustic spaces. Our department has these resources. With support of this proposal, DRAM 364 will be relocated to our working theatre facility. This move will enable students to compare their ideas using specific sound technology in the classroom, the smaller Helms Theater, and the larger Culbreth Theater. *This is my third pedagogical objective.*

My fourth objective is to increase the visibility of the entire drama experience for those undergraduates interested in the blossoming field of sound design. I teach this course each semester to students from a variety of departments including Psychology, Electrical Engineering, Commerce, English, and others. DRAM 364 also attracts student filmmakers interested in digital audio manipulation for film. To completely understand the art of sound design requires a total immersion of the student in the greater process of theatrical production. It is imperative to get these students from other disciplines into our building, so they can develop a useful understanding of the collaborative process of performing arts.

At my previous position at Louisiana Tech University, I taught music and sound technology courses in a self-designed classroom to six students per quarter. I spent six years doing this, developing the ability to present the flexible and personalized instruction afforded by limited enrollment. Sound design and related music technology incorporate elements of several disciplines and a wide variety of electronic equipment. The beginning student needs much practical experience and personalized instruction. My approach to this instructional content and outcomes requires more individual focus in lieu of group lecture.

During the 2004-2005 academic year, DRAM 364 enrollment was limited to five students in the Wilson classroom. This limitation was primarily based on the cost of software licenses. In May 2005, I received an Arts Council grant for the purchase of five additional software licenses, allowing me to increase enrollment to ten students. Now, the course serves more students per semester but lacks the individual component. In fact, comments from last semester's student surveys reflect this. Here is one student's response to the question "What would you do to improve this course?"

> *"Use of more software (processing, mixing, and mastering software), smaller class size (I had a hard time getting in-class time with Michael, since I was ahead of most of the class and they needed his help more desperately)"*

My fifth objective is to limit enrollment to five students, but to offer two sections. This way, I can serve the same number of students and continue to present students with the type of individualized instruction they need.

As this proposal supports the addition of computers and related sound technologies to our facility, it will have immediate direct and positive impact on other undergraduate drama courses.

As stated, the acquisition of this equipment will facilitate incorporation of existing theatrical sound inventory in our undergraduate offerings. In order to stimulate effective learning in DRAM 364, it will be necessary to restructure DRAM 262: Sound Design. DRAM 262, my other undergraduate offering, is an introductory course designed to stimulate understanding of both the aesthetic and technical aspects of sound and sound design. Enrollment for this course is limited to fifteen students. Currently, the class is primarily lecture based, although several projects require students to use free audio software and their personal computers. My plan is to redesign the course so that it is structured to include one-half to three-quarters of contact time spent in classroom instruction. These lectures will prepare the student for the process of sound design and will introduce them to the computer as a tool for creation. Toward the end of the semester, students will be required to use the new technology requested in this proposal for completing practical projects. Practical demonstrations will be presented to them in small groups to be reinforced with individual completion of projects at additional scheduled times.

DRAM 262 is an introductory course for those needing rudimentary preparation before moving into DRAM 364. My goal is to introduce this emerging sound technology to students in preparation for meaningful participation in DRAM 364 as beginning sound designers. DRAM 262 will serve to instruct the students about how to use the technology, and DRAM 364 will require them to interface their knowledge with our existing facilities and technology. They will also be challenged to develop innovative uses of the new technology.

This proposal will impact undergraduate students from other disciplines. In fact, there has been interest expressed by Studio Art and Music regarding interdisciplinary studies and I am eager to explore these possibilities as a potential outcome of this proposal. In addition, I host as many as four independent study courses per semester for individual students interested in applying sound design techniques to theatrical production and other fields. We explore sound as an influential element of filmmaking, dance, and musical composition. I am eager to help these students and have done so with a small studio in my office comprised of a mix of University and personally owned technology. With support of this proposal, I can provide the emerging resources necessary for them to properly explore their ideas.

Other drama faculty members will find these resources useful for enhancing undergraduate teaching. Scenic, costume, and lighting designers rely heavily on computer-based technologies for instruction and construction of ideas. Drama faculty in these areas will be encouraged to use the new technology as a teaching resource- a place to introduce new software and compatible hardware. Creative applications such as image manipulation software, CAD software, and database software can be added to these systems for incorporation into the classroom experience. Useful hardware such as scanners, digital cameras, and lighting control can be interfaced as well.

I asked faculty from our department how they each could enhance undergraduate teaching with the items requested in this proposal. Colleague Richard Warner teaches two undergraduate courses in Film Acting. These courses require the use of the department's digital video camera and basic video editing software that will come installed on the computers requested in this proposal. During the summer sessions, DRAM 205: Fundamentals of Film Acting could make use of this technology during every class. In his DRAM 245, Film Acting for Undergraduates, two of the three major projects in the course would be greatly enhanced by the use of such technology. Graduate students studying this discipline can utilize this technology for similar projects.

Production Coordinator Shawn Paul Evans has expressed interest in using this equipment for Drama 353: Production Management. This course has an enrollment of twenty to forty students and is offered each semester. Production Management requires the generation of much paperwork and the dissemination of information to others associated with a particular production. Students must become familiar with database, web design, and print design related software. The proposed studio will be equipped with FileMaker Pro, a powerful database application. Mr. Evans would like to introduce his students to Dreamweaver (web design software), InDesign (page layout software), and Microsoft Word. These software applications can be purchased by our department and easily added to the "build" of our studio.

Other faculty members from our department have shown similar interests. It is likely that within one year of securing this new technology, as many as 100 students will benefit from the enhancements this equipment will enable within our undergraduate offerings.

III. Preparation and Feasibility (Two page limit)
How do you visualize the stages necessary to complete your project during your fellowship year? Will the programming be done by you or will you require a student programmer? If someone other than you will be writing the programs, what plans have been made for ongoing updates and enhancements? What timetable do you envision for completion of the project? When do you anticipate implementing the results of the project in the instructional program of your school or department?

The items requested will integrate seamlessly with the existing sound technology in our theatres. Sound files can easily be transferred from the student's workstation directly to a playback system for review. This ability to move from the studio environment to the actual theatre during a class period will facilitate improvements to my instruction.

The Department of Drama has continually supported me in this endeavor. Upon my arrival, the department's Equipment Trust Funds were dedicated to the acquisition of the sixteen-channel surround, computer-based audio playback system in our Culbreth theatre. Five software licenses of high-end audio software were immediately purchased to compliment the Wilson classroom. A 7.1 surround sound classroom system was purchased to augment DRAM 262 at the beginning of this academic year. Department funds have allowed me to outfit our smaller, Helms theatre space with a twelve channel system and acoustically treat our Culbreth orchestra pit with sound baffling tile. *And, our Chair has allocated Room B010 in the Culbreth Building as a space to compliment this project.*

The University of Virginia Council for the Arts has also provided support by granting me five additional copies of our classroom software. This generous grant ($1250.00) allowed me to serve an additional five students in the Wilson classroom. These ten copies are an asset to that serves my classes and will integrate with the items in this request without need of additional funding.

I will be responsible for installing the equipment and managing its use. At Louisiana Tech University, I designed and installed a similar teaching space for sound design and music technology instruction. I completed the entire process of designing the system, purchasing the equipment, and installation within months. The installation is still being utilized for instruction of these courses.

The ability to seamlessly integrate this new equipment with our existing inventory is key. Our Department of Drama has in its inventory a variety of traditional and wireless microphones, digital signal processors, speakers, amplifiers, playback devices, and mixing consoles. These items are necessary components for instruction of sound design and will be interfaced with the items described in this project.

The proposed time line for implementation of this grant is as follows:

July-August, 2007

- Fine tune the equipment list, and begin purchasing.
- Finalize design of custom equipment desk and send to our scene shop for construction.
- Fall Semester, 2007
- Begin developing new syllabi, course calendars, instruction material, and course projects for DRAM 364 incorporating the new equipment.
- Add section to website for presentation of new course materials.
- Install custom desk into room B010 in the Culbreth Building.
- Initiate faculty discussion of ways to incorporate this technology into our other theatre courses.
- Begin introductory installation and testing of technology.

Spring Semester, 2008

- I have been approved for Sesquicentennial leave during this semester. This would serve as a convenient time to finalize installation and equipment, as well as completing the plan for implementation of courses in the new teaching space. During this semester, I will primarily be located in Charlottesville, and will be able to attend TTI monthly meetings and work daily on installation.

Fall Semester, 2008

- Transfer instruction of DRAM 364 from Wilson to the Culbreth building.
- Begin introducing DRAM 262 students to equipment.
- Begin assessment of improvements in teaching.
- Post student examples on website.

Beyond…

- Introduce studio as an instruction resource for other drama courses.
- Provide operational instruction to other Drama faculty.

IV. Evaluation and Assessment (Two page limit)

What criteria can be used to evaluate accomplishments during project development (the Fellowship year)? How can the pedagogical effectiveness of the project be measured? What is "success" for this project? Are there existing tools, measures, or benchmarks that could be used in the assessment and evaluation of particular aspects of the project?

I have created a website documenting my students work titled "Sound Design at the University of Virginia" and located at http://www.people.virginia.edu/mr2xk. Included on the website are illustrated notes for assignments, useful links and resources, sound inventory for the department, and samples (by semester) of students' work. This website serves as useful tool for comparing current student work with completed work from previous iterations of the course. The site entices the student to complete work worthy of "publishing" on the website for the public to listen to. It will be useful to compare work completed after redesigning this course to student work from previous semesters. I anticipate student work will be markedly improved and more sophisticated. An expected outcome is a broader knowledge of the greater collaborative process and the myriad of emerging technology required to complete the entire design process.

It may also be useful to select student work completed before and after the addition of this equipment and solicit adjudicators from the professional theatre to compare them. To do this, the results of a specific assignment common to both versions of the course would be sent to colleagues working professionally or at other universities.

I have found the anonymous course evaluations to be a useful way of evaluating the success of my instruction. In order to receive more specific feedback, I can post additional questions to the survey regarding the utilization of the new studio towards effective teaching.

As my teaching evolves, I seek new ways to determine evidence of student learning. I have recently been introduced to the services of the Teaching Resource Center. One particular service of interest is called the Teaching Analysis Poll. The Teaching Analysis Poll will be useful for assessing the impact of the project.

Those students in DRAM 364 displaying advanced interest in sound design will be encouraged to participate in our production program. This activity will allow the application of classroom-based learning to the actual design process for a specific Department of Drama production. A professional representative of the Kennedy Center American College Theatre Festival responds to each of our productions. The respondent meets with designers before the performance and with the company (director, designers, cast, & crew) after the production for an immediate oral response. Soon after, a written response comes to the department. These responses provide constructive feedback for each artistic contribution, including sound. This objective evaluation of the work by an unbiased respondent will be useful toward evaluating the success of this project. This evaluation often results in nomination for the student designer to participate in a regional competition where the work is presented and further evaluated by national artists. At this event, the top regional designer is chosen to participate in the national competition at the Kennedy Center the following spring. At this national competition, top professionals review and analyze the student's design providing insights into the process and the product.

Other professional outlets are available as a means of assessment. National opportunities with the United States Institute for Theatre Technology (USITT) and regional opportunities with South Eastern Theatre Conference (SETC) provide a forum for presentation and professional evaluation. Our students are encouraged to participate in these competitions and portfolio reviews as an outlet to showcase their design work and receive professional review. Recognition of excellence at these events through awards would reflect back on the quality of the work undertaken as a result of this project proposal. Representation of sound designers from the University of Virginia at these events would serve as direct evidence of success.

V. Collegiality in Project Development (One page limit)
Comment on your expectations regarding interdisciplinary discussions with other TTI Fellows (retreat, monthly meetings, and informal exchanges) during the development and early implementation stages.

I have made collegial connections while constructing this project. Conversations have been initiated with Lela Marshall at ITC, and Jama Coartney at the Digital Media Lab. I am committed to extending and enhancing these relationships. It will be important for us to discover new teaching with technology strategies and find ways to collaborate.

I have developed an interest in and openness to sharing these resources with other disciplines. Jama Coartney in the Digital Media Lab has shown interest in establishing a professional recording booth, sound capture station, and possibly a surround sound space. She also has researched the addition of two podcasting stations for student broadcasting. I have consulted with her on this and will continue to confer with her about approaches and technology.

During the spring of 2005, I attended the Teaching Resource Center's "Teaching Portfolio Workshop." It was a pleasure to discuss teaching philosophy and strategies with a variety of faculty from other disciplines. I discovered many commonalities when comparing my notions of teaching to those of faculty in other fields. The comparison of pedagogical ideas is something I expect to participate in with other TTI Fellows.

I am very interested in discussing technology with faculty from other disciplines. How do they use it? What is the aim of their use? How can we collaborate? The development of a network of mentors will be an asset to me. And, I am prepared to serve as a mentor to faculty beginning to experiment with technology.

I have presented research and instruction to other faculty within the greater institution. At Louisiana Tech University, I presented a workshop to interested faculty titled, "PowerPoint Tips and Tricks." The workshop was presented on March 25, 2004, at the Center for Instructional Technology and Distance Learning (CITDL). Also at Louisiana Tech, I was the faculty member associated with music and sound technology within our School of the Performing Arts. Occasionally I was asked to demonstrate new equipment purchases to the Deans, Vice Presidents, and other interested faculty from around campus.

My research has been presented to other professionals and teachers on music and sound technology at the Institute for Archiving and Recording Music in Skopje, Macedonia, and for the Czech Society of Arts and Sciences in Pilsen, Czech Republic. After the presentations, I engaged in stimulating conversations with individuals about the concepts presented. This type of interaction with peers serves as a stimulant of my own learning and teaching processes.

VI. Dissemination (One page limit)
Include a plan to make others in your department aware of your TTI work. Do you foresee any applications for your work beyond your department? Are there professional channels (such as specific conferences, workshops, or journals) that would be effective ways to communicate the project to a larger constituency?

My website, http://www.people.virginia.edu/~mr2xk, serves as an excellent way for other universities, faculty, and students to witness the results of work completed in DRAM 364. Once this project is initiated, a new section to the site will be added reflecting the new quality of work afforded by this project. The requested technology can also aid students in completing a professional looking portfolio, and these types of documents can be presented on the site.

An exciting opportunity to showcase this project exists here. An instructional and informative documentary on DVD can be created using this new, requested technology and our existing inventory. Undergraduates would complete this project with mentoring from colleague Richard Warner as videographer, a graduate student as director, and myself as writer/producer. DRAM 364 students will learn the process of capturing audio for visual media as well as similar editing techniques used for video creation (the two are closely related.) The finished product could be used in a variety of ways, from presentation at conferences to recruitment.

This technology has interdisciplinary potential. I can see opportunities for outreach to other departments, in particular, other artistic disciplines. Theatre asks of its participants to understand painting, architecture, music, light, literature, textiles, etc. Any technology Drama utilizes has the potential to serve all these areas. Therefore, this project would allow ample opportunities to participate in interdisciplinary functions. It would be interesting to utilize the equipment for those adults interested in continuing education. Small music and sound related courses could be taught using this studio. Other disciplines related to theatre could be explored in this way.

As already mentioned, I have made the entire Department of Drama aware of my intentions, and they are in full support. They have presented many ways to utilize this equipment as new components for their courses.

VII. Brief Summary of Equipment and Support Needed (One page limit)
What sort of equipment (hardware, software, supplies) is necessary for the success of the project? Are there any anticipated training needs? If graduate assistants or other student employees will be involved, what role will they play?

As a specialist in the field of Sound Design, I am already very familiar with all of the technology requested. Therefore, there will be no training required for me to begin enhancing my courses. I will make myself available to facilitate other faculty's usage of the equipment.

At the heart of each system within the studio will be an Apple iMac. These computers are of the newest variety and include dual 2.16 GHz Intel Core Duo processors. Digital audio manipulation requires fast processing, and these are faster than any computer currently owned by our department. Each machine will have two gigabytes of RAM and a 250-gigabyte hard drive. iLife is a powerful multimedia suite of software created by Apple and comes standard on these machines.

Each of the five computer based stations will include:

- USB MIDI keyboard/controller for MIDI and musical data input
- Firewire Audio Interface with multiple inputs for professional sound recording
- Digital Performer, a comprehensive sound and MIDI recording software package
- Reason 3.0, a MIDI sequencer with an extensive set of "virtual" sound processors for creating music and sound
- GarageBand, a simple MIDI and sound application for beginners
- iMovie and iDVD, introductory video editing software

As listed in the budget (see attachment), additional software will be necessary for seamless integration with our existing equipment. We currently have two Macintosh- based systems for sound construction that will each serve as an interface between the items in this proposal and our computer-controlled theatre sound systems. It will be necessary to add Reason 3.0 and FileMaker Pro to these machines. Although these machines will not be housed with those requested in this proposal, this software will allow them to serve as two additional "seats."

The equipment will be installed in Room B010 in the Culbreth Building. The room is currently a multi-use space and contains drafting tables and drawing supplies/storage. These stations will occupy one wall of the room. The new installation will coexist with existing items in this room. The room's schedule of use will need to be redesigned so students currently using this space to complete projects for other courses will not be hampered. I have talked with our department chair about this plan, and he is in full support.

I will install this technology and prepare the strategy for its use. The installation should not be challenging, as this hardware is easily connected using standard universal system bus (USB) and Firewire interfacing. Beyond that, a week will be required to install the software. I will design a single desk to house all pieces, and our scene shop will be hired to construct it.

VIII. Budget (Two page limit)

Provide as precise an outline of your budgetary requirements as possible, using the following guidelines. Project budgets should not exceed $20,000. Since our annual program budget is fixed, however, proposals for less than the maximum budget are encouraged in order to enable additional projects. General considerations about developing a project budget follow.

Please see attached spreadsheet.