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PROCEEDINGS FROM THE FOURTH NATIONAL SYMPOSIUM ON MUSIC INSTRUCTION TECHNOLOGY JUNE 6-8, 2002

Sponsored by the School of Music at the University of Oklahoma, the Auburn University Department of Curriculum and Teaching, and the Florida State University Center for Music Research.

The National Symposium on Music Instruction Technology was held June 6-8, 2002 at the University of Oklahoma School of Music Catlett Music Center, Norman, Oklahoma. The ongoing theme was "Practical Applications and Research." The Symposium is an cooperative project of the Center for Music Research at Florida State University, the Music Education Program of Auburn University, and the School of Music at the University of Oklahoma.

Music educators and music education researchers shared knowledge and experiences concerning technology enhanced music instruction. The goals of the Symposium were to (a) accelerate the exchange of ideas among practitioners and researchers, (b) to encourage appropriate uses of music technology in PreK-12 learning environments, and (c) to disseminate findings to individuals who use, or want to use technology in music learning and teaching situations.

The Fifth National Symposium on Music Instruction Technology was held June 26-28, 2003 at Illinois State University, organized by Dr. Kimberly McCord. The Sixth Symposium on Music Instruction Technology was held June 26-28, 2004 at Valley City State University, North Dakota and was organized by Dr. Sara Hagen. The Seventh Symposium will be held June 16-18, 2005 at Hartwick College in Oneonta, New York, Dr. Jane Kuehne, organizer (see announcement at the end of this issue).

The following pages are summaries of the Symposium presentations (a few presenters did not submit summaries).

The Perfect Interface: WebQuest with Simulation Gaming

James Foster, Russellville School District, Russellville, AK

Usually when one thinks of computers and students, gaming is the first thing that comes to mind. Exploding targets, flashy 3-D effects, and repetitive music draws thousands of children (of all ages) into hours of exploration and fun. Could all of that fun be used in the educational setting? The answer is yes. The term *edutainment* has come to describe one facet of the gaming industry, i.e., combing computer technology with education. However, simulation gaming interfaced with an educational objective might aid teachers in the achieving new expectations for students. Music teachers are not sheltered from this desire. In simulation gaming, students are given a simulated environment with which to solve a problem.

WebQuest is an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet, optionally supplemented with videoconferencing (Dodge, 1995). Students become actively involved with integrated technology through such software programs as databases, spreadsheets, and presentation programs. Music teachers who use WebQuests as a portion of their curriculum must change from the traditional role of leader to one of learner. This type of activity involves collaborative work. Each team member has certain responsibilities that ultimately combine into a final project. The purpose of this session is to show how a WebQuest, combined with simulation gaming, can bring about different learning strategies.

General Music

In a general music classroom, teachers are often faced with reluctant students. This paper describes a strategy where students became actively involved in the learning process to produce a "real world" product. The objective for this classroom activity is "The student will demonstrate understanding and comprehension of 20th century musical styles by creating an amusement park." Students were divided into groups of four and given pertinent information:

1. Each group member is to select a musical style of the 20th century.

2. Each member then will fill out the Amusement Park Questionnaire form.

3. After significant research has occurred, the student will go through the simulation game tutorial *Roller Coaster Tycoon*. The objective is for the student to create one portion of an amusement park based on their chosen musical style. The following elements should be in-

cluded: (a) All rides must be named according to their musical style, (b) all eating places should reflect food that is indicative of the genre, (c) all park employees must represent actual people associated with the style, (d) all souvenir shops will sell items that are associated with the chosen musical style, and (e) all performers must be actual performers.

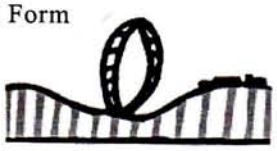
4. Two days are allotted for the actual playing of the simulation game.

5. After two days, the students will create a *PowerPoint* presentation that highlights the basic features of the musical style and the theme park.

6. Based on the information presented, the class will vote on which park might attract more customers.

Technologies used in this project include: *Copernic Search Engine, Roller Coaster Tycoon, HyperSnap-DX,* and Microsoft *PowerPoint.*

Amusement Park Proposal Form



Name of Amusement Park:

Members of the Proposal Committee:

Sections Name: 1.
2.
3.
4.

Begin the journal by writing questions you have about the music and time period:

What are some things you will have to know to complete your task?

Research the musical genre you have selected, recording answers to your questions and other helpful information in your journal. Add new questions to your journal as you think of them.

Choose a time period that your group thinks is the definitive time period for your genre. Also, choose a location that was the center of creativity for your genre in the time period you chose. For example: if your genre was Pop, you might consider disco music to be definitive and so choose New York in the 1970's as your location and time era. Include in your presentation an explanation of why you chose both the time period and the location in which your Land is set.

Additional Questions to Answer:

1. Who were the most influential and dynamic musicians of the time? (i.e. musicians of the Royal Court, Grammy award winners, Billboard Magazine chart toppers, etc.)

2. What were the popular songs of the musical genre?

3. What events took place during this time period that may have influenced the music that was being composed and performed? What was the political climate?

4. What were the customs and fashions of this time period? (i.e., clothing styles, food, architecture, etc.)

5. What other art forms were current and significant to the music topic? (i.e., paintings, print ads, theatrical releases, etc.)

Group Work: In this section, one person is responsible for completing one of the questions listed:

Person Responsible:

Choose musical artists who will "perform" in your Land. Pick musical artists you feel are important to the history of the music genre you have chosen and that would have lived in the time period and location you have chosen. Identify the characteristics and mannerisms of these artists and decide how the entertainers you hire will imitate these performers.

Choose ten different musical selections to be used as background music throughout your Land. The music chosen must be typical of the genre and time period.

Individual Assignment:

Create a time warp entryway establishing the historical setting of the music. People will walk through this display when they enter your region of Musicland. It will provide a brief glimpse of important historical events in that era to give your visitors a mindset when experiencing your section of the park. You can use audio, video, pictures, newspaper clippings from the time period, etc.

Things to include in your park proposal:

1. Plan a restaurant that features the type of food that was a favorite during the time period Land. Name your restaurant and design a menu. Design costumes for the employees.

2. Plan a souvenir shop that carries reproductions of instruments and musical recordings that are unique to the musical genre you are focusing on in your Land. To represent this shop, you can create a diorama with pictures of the instruments and posters on the wall advertising the music. Or, create a catalog of your items that you could send home with customers who want to buy later.

3. Develop theme park rides or activities that creatively use music terms and ideas. Name your park attractions after famous musicians, their music, or musical terms

Rubric for Grading Musicland Theme Park

Use the following areas to evaluate the investors and the proposed park

Category	1	3	5
Does the music selected to be performed and played accurately represent the musical genre, time period, and location?			
Is the choice of time period and location appropriate to the musical genre and based on research?			
Do the performers accurately portray the musical style?			
Does the presentation provide meaningful insight to the proposed park?			
Does your project journal show how you used historical information to recreate the time period?			
Does the featured ride description accurately portray the musical style?			
Do the restaurant and souvenir shops reflect the food, instruments, and songs of this genre, time period, and locale?			
Are the rides and attractions exciting and creative? Are they related to the musical genre?			
Does the model or blueprint clearly show what your team wants to create?			
Could a team of investors learn what your Land is like from examining all of your materials?			

Questions:

How is the music that we listen to a reflection of the times in which we live? How do historical events influence composers and the music that they write?

How does this musical genre influence you as you listen to it? How does the music convey the feelings of the musician and time period to you?

Reference

Dodge, B. (1995). The WebQuest page. Retrieved October 6, 2003, from http://webquest.sdsu.edu/

The Status of Technology in K-12 Music Education

Jack A. Taylor, Florida State University

In our work with music teachers–in music technology classes at Florida State University and in summer technology workshops for teachers–John Deal (University of North Carolina–Greensboro) and I observed three types of K-12 music teachers: those who are curious about (but inexperienced with) the use of computer technology in music, others who are enthusiastic (about using technology in music) and "somewhat" experienced with computers, and yet other teachers who also are enthusiastic, but consider themselves "moderately" experienced.

However, we learned over the years that most music teachers in the latter two categories were experienced in classroom administrative applications, such as word processing and databases–not the applications that are concerned directly with teaching, learning, and creating music (e.g., MIDI, music notation, computer based theory and basic musicianship). It became clear that only a few music teachers had little or no knowledge of the software that can help their students advance more quickly and efficiently in developing music skills; furthermore, the teachers who did have some understandings of these music applications lacked confidence in their abilities to effectively integrate these applications into their lesson plans.

Because we believe that music teachers can benefit from the use of computer technology–and because good music software has been available for almost two decades–we became concerned that so many music teachers seem to have such little understanding of computer technology and the music software available to them. In addition, the fact that some teachers could use the software, but had little feeling for how to make effective use of it in the classroom for their particular grade levels, was especially disturbing to us.

Wanting to find a solution to this problem, we realized that before recommending actions to resolve this condition, a first step is to understand the

exact nature of the problem. Are our observations regarding music teachers and technology valid and widespread? If so, what are their dimensions? Consequently, we decided to collect this information by distributing a national survey to music teachers in grades K-12. The formal purpose of this survey was to determine the extent of music technology being used in the K-12 music curriculum and the daily activities of music teachers and their students, and to collect data about music teachers, their use of computer technology, and their attitudes toward the integration of music technology into the K-12 curriculum.

Research Questions

The following research questions served as the foundation for both the Pilot Survey (see below) and the National survey.

1. Are K-12 music teachers integrating technology into their music curriculum, either within the context of the classroom or outside the classroom (i.e., a special time before or after class)?
2. How much experience and training do teachers have in technology, and what is the nature of their training?
3. In what ways are K-12 music teachers using computers in their music curriculum?
4. What kinds of computers and music hardware and software are K-12 music teachers using in their music curriculum, and where are these computers located?
5. What are the K-12 music teachers' attitudes toward the use of computer technology within the curriculum, and to what degree do they believe technology can be integrated into music activities?

Pilot Survey

The 30-question survey was mailed to three "test" states: New York (large population state), Kansas (medium state), and Utah (small state). Lists of MENC (Music Educators National Conference) members were obtained from MENC headquarters and 600 music teachers, grades K-12, were randomly selected to receive the mailed surveys. A total of 222 surveys (37% response rate) were returned, sufficient for a confidence level of 95% and a confidence interval of 5%. With a few minor corrections, the survey was considered valid and ready for distribution on a national basis.

National Survey

Method and Procedure

Lists of MENC members for all 50 states were obtained from the MENC headquarters. Members were categorized according to MENC divisions (South, Southwest, West, Northwest, East, and North Central), and then 10% of the

teachers were randomly selected from each division (total of 5,445 K-12 music teachers). Surveys were mailed with a letter that explained the survey's purpose and a deadline date for returning the survey (a stamped, addressed envelope was included with the letter).

Results

A total of 991 surveys were returned for a response rate of 18.2%. Although this was a small percentage, it is sufficient for a confidence level of 95% and a confidence interval of 7%. Nevertheless, inference of the results of this survey to all MENC K-12 music teachers in the United States should be made with caution. Table 1 illustrates the return rates by division.

Responses to demographic questions showed that (a) there is no significant difference between males and females in regard to length of tenure or age, (b) the median age is 41 to 50 years, (c) 43.5% of the teachers have master's degrees, (d) 52.0% have been teaching for 15 or more years, and (e) 65.0% have been in their current teaching position for 1 to 10 years.

A substantial majority of teachers (602, 61.4%) do not integrate technology into their curriculum; nevertheless, 73% (723) felt that they are moderately to considerably experienced with technology (73.8%). However, there was a difference between males and females: Male music teachers claimed to have more computer experience than females, at a ratio of almost 3 to 1 (χ^2 [976, 3] = 143.028, $p < .05$). The Southwest division was the exception–there was no significant difference between males and females.

Regarding technology training teachers received in the past, a large percentage were self taught and attended an occasional workshop (43.5%). However, a majority of teachers (51.6%) had not attended a training session. Furthermore, a substantial number reported no opportunities for training (33.8%) and identified inconvenient dates and times, along with the "description of the session" (43.8% of the teachers), as the most common reasons for not attending training sessions.

About half the teachers (457, 49.5%) own one computer–usually a PC (301, 32.6%) rather than a Mac (156, 16.9%). See Table 2 for details. Most individuals have from 1 to 5 computers available at school, and the majority is Macintosh computers (56%). About 40% are PCs and 3.1% are "others" (see Table 3). Two-thirds (66.7%) of these computers are located within the music area.

Eighty-two percent of the teachers indicated that computer technology can be used with "many" or "some" types of music instruction and learning within the classroom, and 93.3% claimed that computer technology can be used with "many" or "some" types of music instruction and learning outside the classroom. Compared to music instruction within the classroom, teachers believed that technology can be used with more types of music instruction outside the classroom, χ^2 (979, 16) = 595.81, $p < .05$. In addition,

Table 1

Distribution of Respondents by MENC Division (18.2% Return Rate)

Division	Frequency	Percent	Cumulative Percent
South	148	14.9	14.9
Southwest	157	15.8	30.8
West	160	16.1	46.9
Northwest	169	17.1	64.0
East	170	17.2	81.1
North Central	187	18.9	100.0
TOTAL	991	100.0	

Table 2

Types and Numbers of Computers Owned (at Home) by the Teachers

Type	Number
PC Only	301
Apple Only	156
PC + Apple	145
Apple + Apple	88
PC + PC	61
3 or more types	172

Table 3

Numbers of Computers Available At School

Number	Responses
1	260
2-5	129
6-10	39
11-15	23
16-20	24
21-30	41
31-40	10
41-50	4
51-70	3
100	1

teachers indicated that technology could "definitely" be used to teach the following activities.

1. Learning to compose
2. Listening to music
3. Learning to perform rhythmic patterns
4. Learning to read music notation
5. Learning music terms

Interestingly, those teachers who did not integrate computers in their music curriculum have access to computers at school (73.3%); furthermore, they would like to learn more about music technology (93.9%) and eventually use it in their music teaching (89.5%).

A total of 379 (38.6%) teachers reported integrating computer technology and software into their curriculum, both during and after (or before) the

regular class time (See Table 4). Listed in order of the most frequent use in class, the music areas were (a) theory, (b) accompanying, (c) composing, (d) Internet (e-mail and Web), and (e) databases. Most frequent uses outside class were (a) theory, (b) databases, (c) Internet (e-mail and Web), (d) accompanying, and (e) composing. More than half (55.8%) of the respondents used software in these areas every class meeting, every other class meeting, or once per week.

Table 4

Music Areas Used by Music Teachers Who Integrate Computers Into Their Curriculum

Music areas	*Outside class	*During class
Database management	168	103
Using the Internet (e-mail, Web)	162	119
Composing, arranging	140	127
Accompany students with MIDI keyboard	150	147
Teaching music theory, fundamentals, sight reading and singing	184	223
Teaching performance skills	61	75
Teaching music history and literature, music appreciation	115	154
Teaching nonmusic (word processing, etc.)	69	45
Marching Routines	27	24
Other (publishing, burning CD-ROMs, improvising, etc.)	11	20
TOTAL	1087	1037

*Number of times mentioned by the 379 teachers who integrate technology

Conclusions

The fact that a majority (61.4%) of K-12 music teachers does not use or integrate computer technology in their music classes perhaps is not surprising, since the survey showed that many teachers do not have the training to make this happen. However, it is interesting to note that most of these teachers were positive about the uses of technology in music (89.5%), and were willing to learn about technology (93.9%). Over 73% have access to computers (although the number of available computers only ranges from 1 to 5), so it seems that they would be willing to apply computer technology to music instruction–if only they had the skills to do so. Apparently they do have skills to deal with technology pertaining to administrative and personal tasks (73% said they were moderately or considerable experienced with technology); but of course, this is a different matter than effectively integrating computer music programs in the curriculum.

The music teachers that integrated technology (38.6%) did so at least once a week–either during or outside (before or after) their classes, and almost half of them (43.5%) are self-trained. The popular music areas for integrating technology are theory and music fundamentals, databases, accompanying, composition (includes music notation), and the Internet. This makes sense, as software applications for these areas are the most accessible, in terms of availability and ease of use.

As mentioned at the beginning of this presentation, we were interested in finding the problems (if any) that disallow K-12 music teachers from involving music technology as effective aids in their classes. The results of this survey show that only about one-third of the teachers in the United States are using technology in their classes, and it also tells us that the remaining teachers are willing to become involved—but that training is needed. Thus our strong recommendation is that a greater emphasis in music education should be placed on offering convenient and relevant technology workshops for music teachers. These workshops should center on the special classroom needs of students, and they should emphasize ways that technology can be integrated in the curriculum to enhance student skills in music.

Getting "In Tune" with Technology: Using the MIDI-Stick and Other Technologies to Teach Intonation to Instrumentalists

Russell Teweleit, West Texas A&M University

It is widely understood that the development of the ability to play in tune is essential to the musical development of any instrumentalist. Karrick

writes, "Intonation is a term that can be used to describe, qualitatively, the result of tuning or the degree to which musicians achieve in-tuneness (1998)." Indeed, perfect intonation is always an unachievable goal. It is a multi-faceted problem that is never truly "solved." Yet it demands the persistent attention of even the finest musicians. Garner states, "Indeed, good bands and poor bands are not differentiated by the absence or presence of tuning problems, but rather the degree of their severity" (p.65).

Recently, developments in technology have led to new tools that show great promise in aiding students and teachers to get closer to the unachievable goal mentioned above. This presentation will consist of live demonstrations of practical uses of technology that should be of use to any instrumental music teacher at any level. More importantly, the ease at which this technology can be made accessible to students will be demonstrated. Specifically, the presentation will focus on the use of the Yamaha *WX-5 MIDI Breath Controller,* the *Matrix Universal Tuner Pick-up,* and *Smart Music.*

The Yamaha *WX-5 Wind MIDI Breath Controller* (*MIDI-Stick*) is an electronic wind instrument. The instrument is fingered similarly to a saxophone; however, its range is far greater than that of any acoustic wind instrument. Yet, because it is electronic, every note is perfectly in tune with the tempered scale.

The *Matrix Universal Tuner Pick-up* is a device that clips on to the bell of an instrument and allows an electronic tuner to display a pitch being played without allowing other pitches played simultaneously by other instruments to affect the accuracy of the reading.

Smart Music is a widely used computer program that is designed to play piano accompaniments for instrumental or vocal soloists. Included with the software are a programmable metronome and an electronic tuner. The tuner is capable of playing the "in tune" pitch back to the student while the tuner displays the actual pitch that is being played by the student.

This presentation was based on a study conducted by (the presenter) titled "Getting In Tune with Technology: A Qualitative Inquiry into the Use of Technology in Teaching Instrumentalists." The study was aimed at identifying some concepts involved in the teaching of intonation to undergraduate music students and how recent developments in technology are currently being used to aid in this endeavor. However, as stated above, the focus of the presentation will consist of demonstrating the practical application of this technology in the instrumental classroom and private lesson studio.

References

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Smart Music Studio 6.0. (2002). Available: http://www.codamusic.com/coda/sm.asp
Yamaha *WX5 Wind MIDI Breath Controller.* (2002). Available: http://www.yamaha.com/cgi-win/webcgi.exe/DsplyModel/?gMCD00005WX5#

The MIDI Academy Orchestra Program

James P. J. Noxon, Hawaii Community College

Concerns about the lag in technology integration within music teacher education were raised at a recent conference. John J. Deal, Jack Taylor, and Sam Reese presented results of their respective investigations at CMS/ATMI in November 2001. These concerns lead to some of these conclusions: access to training is limited, paradigms are limited, system complexity is often daunting, informality is uncommon, and additional support for women is recommended.

The MIDI Academy Orchestra program is one answer to these concerns. In this workshop, music technology is integrated in an environment that is intended to be less formal, more inclusive, with a different mindset, while still incorporating a very high level of system complexity. This occurs by matching the modus operandi of most music teachers: as an ensemble.

By mixing pre-college students with in-service music teachers, the familiar public school music classroom environment is more nearly approximated. By engaging participants in familiar school music activities (group singing, instrumental ensemble rehearsal) the barriers of computer anxiety are minimized. As a result of this approach, participants quickly find themselves immersed in a classroom activity that models a high level of technology integration. The result is music teachers who find an important "change of heart." Instead of reservations about the technical complexity of such an activity, they find motivations towards adopting this model within their own practice. Then this effort can lead to teachers modeling technology integration for their students, which further can lead to a bottom-up initiative within music teacher education.

Music is just a lot more fun as a team sport!

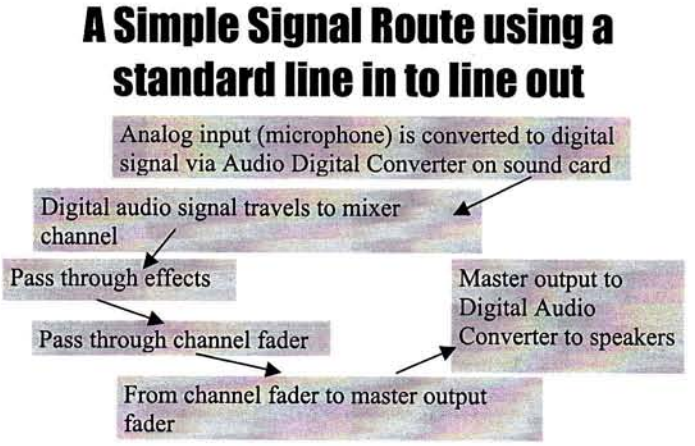
Generating and Organizing Digital Audio Files for Multi-track Composition Using Audio Editing Software

Sara Hagen, Valley City State University

The purpose of this workshop was to acquaint teachers with the compositional possibilities of working with digital audio as a sound source. Students can create their own sound sources in addition to incorporating the myriad of loops and sounds available on the Internet.

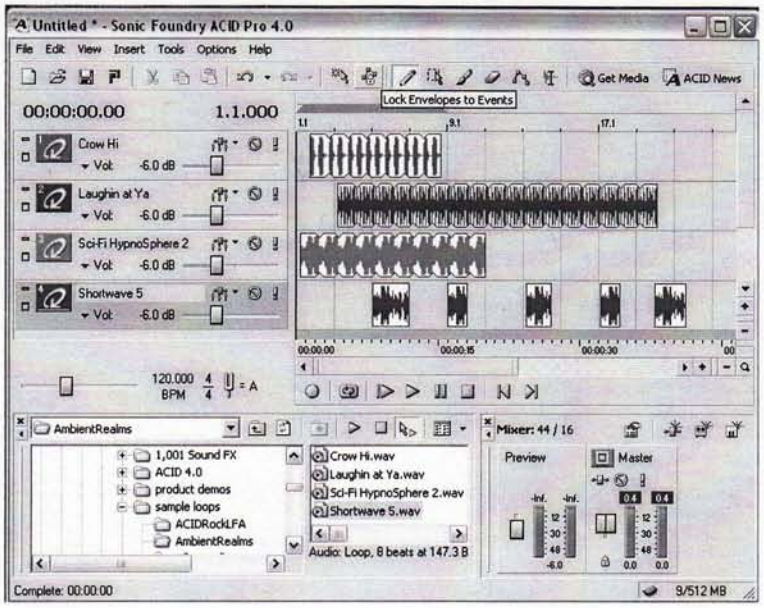
The following equipment was used for the symposium demonstration: a Windows-platform laptop, Sonic Foundry's *ACID 2.0*, Syntrillium's *Cool Edit Pro* (Update: *Acid* is now available in version 4.0., as well as a more affordable version without video options, *Acid Music* 3.0; *Cool Edit Pro* has been renamed *Adobe Audition*–see the Adobe Web site), and a microphone and speakers.

A brief description was presented showing how digital sounds are captured and utilized by the computer. For example:



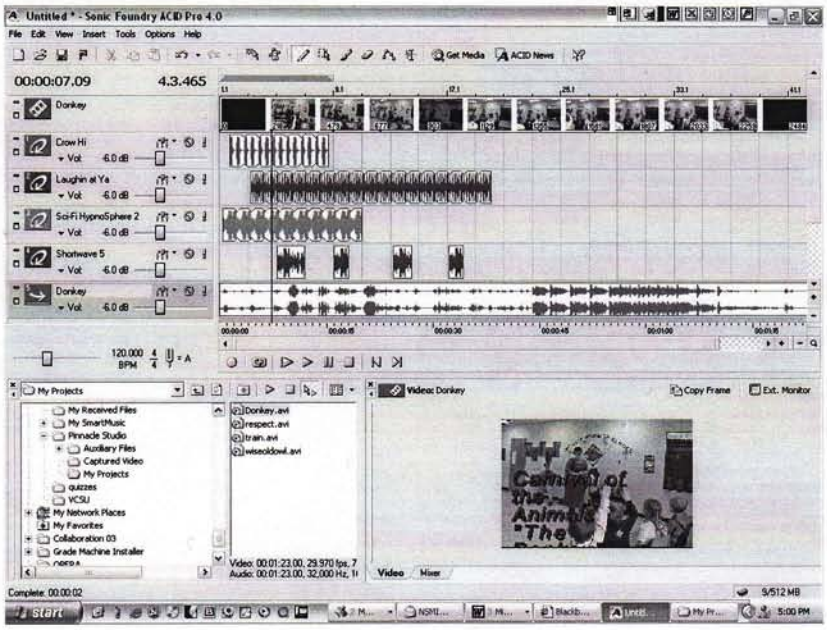
Several examples of electronic pieces created in this manner were shared with insights into the processes of their creation. Then sound file (.wav) sources were created by recording "found sounds" within the room and participants' voices directly into *Cool Edit Pro.* The resulting sound files were manipulated in *Cool Edit Pro* to produce new variations of the originals using various effects processors, such as time stretch, pitch shift, reverb, etc. The second portion of the session was devoted to using those files along with pre-made sound loops from the examples folder in *Acid 2.0* to create multi-track compositions with audio sounds.

Acid is a user-friendly software that allows the composer to import any .wav or .mid file with a simple click and drag routine. Once imported into the project, the composer again uses a click and drag routine to place the sound file into the multi-track window. For example, if a sound file is a loop of four beats, the composer can drag as many loops across the timeline to fill as many measures as desired with that sound. The next sound is added in the same fashion with placement either at the beginning, or in a canon-like manner. Sound files need not be looped, however. Any sound in these formats can be imported into the project. The *Beatmapper Wizard* can create a file that is mapped to a downbeat pattern for easier synchronization, however. The screenshot below shows a four-track composition taking form with various lengths and iterations of the sound files layered together.



Examples of how multi-track composition environments have been used as movie sound tracks also were shared. For example, voice-overs can be used over recordings with video presentations for music appreciation activities in the classroom. Layering of files can occur using audio, MIDI, and video or any combination of these, and finally rendered as movie files (*QuickTime* .mov, .avi) or as sound files (e.g., .aif, .wav, .mp3, .wma). Below is a screen shot of showing an *Acid* project with a video file included in it.

Many other software packages are available that accomplish the same tasks, but *Acid* is the software package that can integrate all three file types in a user-friendly atmosphere with many options and render them in a final product.



Using Blackboard in Musicology Courses

Paula Conlon, University of Oklahoma

This paper will describe the utilization of *Blackboard,* a user-friendly course management tool, in a musicology course for freshman music majors. The operative word here is "user-friendly." Only a few faculty members at the University of Oklahoma School of Music had made periodic use of the course management technology tools that were offered prior to the introduction of Blackboard. To most of us, the learning curve seemed too steep to justify the time required to become proficient. A combination of forces entered into my decision to forge ahead with Blackboard, primarily a frustration with photocopying and copyright restrictions. Since I knew Blackboard could help in solving these challenges, I decided to experiment with the use of Blackboard in my freshman music major course in musicology. With help from the Information Technology department, I was up and running within 24 hours: hence my endorsement of the term "user-friendly."

Blackboard offers a wide array of services, from posting announcements, class syllabus, assignments, and office hours, to an online grade book, discussion board, chat room, class e-mail, online quizzing, and digital drop box to submit homework. One of the most attractive features I found in Blackboard is the ability to pick and choose what works for you, and block the other areas so the students only see the options that you have

decided to use. Even if an instructor only utilizes the online grade book, they will save themselves a lot of time and will ensure the privacy of the students, as students can only access their own grades. As Blackboard now is automatically entered for all courses offered at the University of Oklahoma, the majority of the initial start-up is completed before the instructor even logs on. For my first foray into the use of technology as a course management system, I decided to stay with the options that would facilitate what I already did in my courses, and leave discussion boards, chat rooms, online quizzing and digital drop boxes for another year.

My main concern was to get the digital streaming of supplementary musical examples in place as soon as possible. Since the students can listen to, but not download the music excerpts, there is no problem with copyright restrictions, and personnel at the digital lab had the music clips entered with links to Blackboard within a couple of days. Similarly with supplementary readings, the University Library installs the text online within a two-week period, or the teacher can scan the material into a Word document and create a link to Blackboard. This gives the instructor a tremendous amount of freedom to add course material to complement the repertoire of the concerts being performed that semester. After Stravinsky's *Histoire de Soldat* was performed in the spring of 2002, a number of students expressed an interest in using this performance as the basis for their research projects. I posted readings and musical excerpts to accompany a Stravinsky lecture in time for the next class, thereby bridging the gap between the music history course material and what was happening in the applied area of the school.

The class I teach is titled "Music in Culture," mainly dealing with non-western hemisphere music. Since one of my mandates is to make this musicology course more meaningful to our predominantly performance-based students, I use Blackboard to list upcoming events (both on and off campus) that can be used as the basis for the required research project. Rather than relying on a notice board and a verbal announcement, the students have a regularly updated list available to them 24 hours. I remind them of that week's concerts with the support system of Blackboard as back-up regarding the "what, when, where, and why" details for each event. Similarly, links to websites that aid in finding resources related to the research topics can be posted online.

Another feature of Blackboard that I found particularly appealing is the ability to enter the material, but not install it online until it "suits" you. This way, one can use Blackboard for class preparation, then adjust it, if necessary, before displaying it after the actual class. I use overhead transparencies to outline points during the lectures, which I then install online. Thus students who are absent will learn what they have missed and can get caught up before the next lecture, and supplementary readings can be made available as needed.

I believe that the most important thing to remember about the use of technology as a course management tool is that it augments and supplements human contact but does not replace it. My initial reluctance to "jump

on board" the technology bandwagon stemmed from my concern that it would create a rift between the students and me. However, the reverse is true. Today's students have grown up with computers, and their use of *Instant Messenger* and e-mail is extensive. They are likely to receive information faster by means of the Internet than by any other venue. Since they are online so much anyway, checking what is on Blackboard becomes second nature to them. If I want to direct them to a particular entry, such as a review sheet for the next class, I need only send a group e-mail. Similarly, if I need to cancel class, I can be confident that the majority of the students will get the message.

One of my goals for 2002 was to become more independent in my use of computer technology in my teaching and research. I took on the challenge of using Blackboard not because I was convinced it was the best way to go, but because I did not want to be left behind. Instead of being a time-consuming burden, I discovered that it freed me to focus on the preparation for the lecture itself–while Blackboard did its job in the organization of the material and the transmission of information to the students enrolled in the class. As Blackboard's website claims, "You do not have to be a web developer because the shell of the course is created for you. You simply have to add files."

My adoption of Blackboard has convinced other members of the faculty that technology is a tool that is accessible and useful for those of us who previously have viewed computers mainly as glorified typewriters and e-mail machines. Current technology can offer much-needed assistance in administrative and secretarial tasks. With your new-found time, you can concentrate on your professional interests, creating content to add to the files with whatever course management system your institution is using.

Tweaking Renaissance Music with Information Technology

Karen Garrison, Auburn University

This presentation uses information technology to present various aspects of Renaissance music. In a college, high school, or elementary music appreciation class, Renaissance music can be the most difficult type of music to present. I find this to be a particular challenge in my university appreciation courses. A majority of the students are just fulfilling an elective requirement and have no interest in any type of classical western music–much less music of the Renaissance period. The students consider it old and boring stuff, and rightly so. Most of the students have never heard of any of the composers from this time period, and the musical instruments are odd sounding and out of tune. Even though the style of Gregorian chant may be somewhat

popular with students, Renaissance music is still very unfamiliar to the students.

Visualization can be helpful in instructing students in areas which they are unfamiliar. To make Renaissance music come to life, I have put together a *PowerPoint* presentation by importing visuals and linking them to Internet sites. The Web sites that I have used include pictures of Renaissance instruments, sounds of the instruments, pictures or drawings of important composers from the period and their biographies. I also include sites that have important historical information about the Renaissance in an effort to integrate the arts.

In addition to running the PowerPoint show, handouts were distributed at the presentation listing the Web sites that were found to be the most helpful in developing the project.

Using Technology to Teach Beginning Sight Singing

Jane M. Kuehne, Florida State University

Teaching sight singing to beginning students can be challenging. With the ever-growing number of published sight singing and sight reading methods, choosing a method that best suits both teacher and students has become a daunting task. Typical sight singing instruction most often includes large group instruction using various resources. The work presented here includes an outline of a sight singing method that is designed for use by individuals or large groups (ensemble). It uses moving highlighted notes and rhythms with corresponding sound to aid in teaching beginning level sight singers to read music. The exercises were created using *Macromedia Director 8.5 (1984-2001),* henceforth referred to as *Director.*

Using Macromedia Director

Director is fairly easy to learn to use, but intensive in process. There are three main components: cast, score, and stage. The cast contains all files used in the presentation (or movie). These files can include various media types, text, images, and other files needed to create multimedia presentations. The score includes the actions of each of the cast members, including how long each remains on the screen, integration of media files, along with tempo markings, and other functions that are necessary for the presentation to run correctly. The stage is where the "action" takes place and is (for the most part) what the end user will see (with the cast and score integrated). Figure 1 shows a screen shot of these three elements (cast, score, and stage) as viewed in Director.

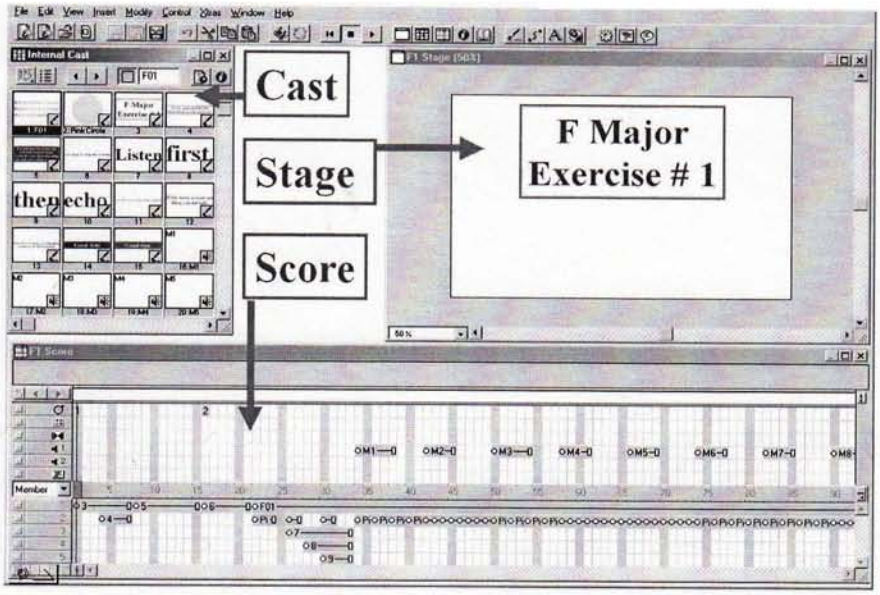


Figure 1. Elements of the *Director* Screen.

Sight singing Method

The proposed sight singing method is designed for beginning sight singers. Rhythmic and melodic concepts are separated so that one does not hinder the development of the other (for example, complex rhythms may impede melodic reading). Tables 1 and 2 show the order of presentation for rhythmic and melodic concepts, respectively.

Bruner's (1977, p. 52) idea of spiral curriculum was utilized to develop the structure of the sight singing method. Exercises are sequenced so that each new exercise includes all previous concepts in addition to a newly presented concept. For example, rhythm exercises in lesson 30 includes all the concepts from lessons 1 through 29 (see Table 1). The same is true for melodic concepts. However, melodic concepts are presented in two formats. First, students listen and echo the various intervals for each concept with no visual cues. After students have mastered singing the various intervals, they are presented with the same exercises on paper (visual cues). This process allows them to gain an aural understanding of pitches and intervals prior to learning how to read them from a staff.

Table 1

Order of Rhythmic Concepts.

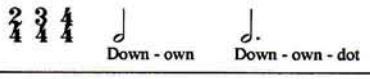
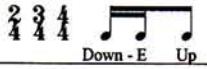
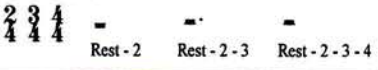
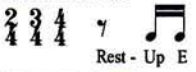
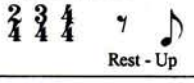
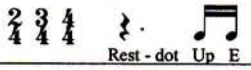
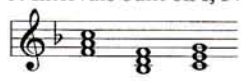
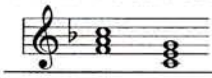
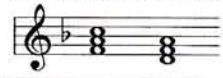
Lessons 1 through 17	Lessons 18 through 30+
Lessons 1-2  	Lessons 18-19 
Lessons 3-4  	Lessons 20-21 
Lessons 5-6  	Lessons 22-23 
Lessons 7-10  	Lessons 24-25 
Lessons 11-12  	Lessons 26-27 
Lessons 13-14  	Lessons 28-29 
Lessons 15-17  	Lessons 30+ 

Table 2

Order of Melodic Concepts, Based on Chord Tones

Concepts 1 through 4	Concepts 5 through 8
1. Intervals built on I chord 	5. Intervals built on I, IV, and V chords 
2. Intervals built on V chord 	6. Scale motion built on I, IV, and V chords 
3. Intervals built on I and V chords 	7. Intervals built on vi chord 
4. Intervals built on IV chord 	8. Intervals built on I and vi chords 

Suggestions for Future Research

There has been a fairly wide variety of research in sight singing that includes the use of computers and/or other technology. Early research areas included using the computer to analyze pitch accuracy (Kuhn & Allvin, 1967; Graves 1980; Loreck, 1990). Later research has included using computer aided instruction (CAI) to aid in teaching and evaluation of sight singing skills (Hesser, 1988; Ozeas, 1991). Newer fields of research include using the computer to write music as a way of reinforcing music reading concepts (Prasso, 1997). The pervasive nature of the computer in our culture requires its use in classrooms. However, there are little data to show that it truly is an effect tool for teaching students to sight sing accurately. Research is necessary to validate the use of computers and technology in teaching students to read music.

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Using Director 8.5 to create professional music education portfolios

Geoffrey Reynolds, University of Vermont

The software program *Director 8.5* by Macromedia is a powerful authoring tool used to create dynamic interactive multimedia movies. The program's interactive and multimedia features make it a desirable tool for creating professional portfolios. This article describes how Director 8.5 can be used by pre-service teachers in the creation and distribution of their professional portfolios. This article contains three large sections: (a) what a portfolio is (basic principles of a portfolio and portfolio types), (b) current research (studies investigating the effectiveness of portfolios as learning tools and the use of professional portfolios in training pre-service teachers), and (c) electronic portfolios. The third section will describe how the University of Vermont's (UVM) music education department is exploring the use of Director 8.5 as a learning tool to facilitate preservice teacher's understanding and application of portfolios.

What is a portfolio?

A portfolio (Paulson, Paulson, & Meyer, 1991) is a purposeful collection of a student's work that exhibits the student's efforts, progress, and achievements in one or more areas. The collection must include student

participation in selecting contents, the criteria for selection, the criteria for assessment, and evidence of student self-reflection.

From his writings on the "Problem of Training Thought," John Dewey defines reflective thought (self-reflection) as "[the] active, persistent, and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and the further conclusions to which it tends" (1997, p.6). It is from the student's conscious and voluntary effort that enables the teacher and reviewer of the portfolio to better understand the learner and enables the student to take ownership in the learning process. Portfolios can be powerful tools for learning and understanding the student's thought process. These documents, if well structured, have the potential to reveal much about their learner. They can serve as a gateway into the student's mind, enabling both the student and teacher to understand the learning process.

Kieffer and Faust (1993), while exploring teachers' initial experiences with, and questions about portfolio assessment, identified collection, selection, and reflection, as the three most frequently mentioned elements that teachers identified in their attempts to understand the true purpose of a portfolio. The researchers argue that beyond the collection process, which tends to stagnate, the idea of a portfolio begins to crystallize when the student goes on to compose reflections explaining the meaning of the included samples in light of the particular audience and purpose assigned. The reflective component is what can dramatically transform a scrapbook type portfolio into a richly informative document that maps the student's learning progress.

Students can become empowered learners through creating portfolios. By doing so, they can assume ownership and responsibility for learning in ways that few other instructional approaches allow. As defined by Paulson et al. (1991), portfolio assessment requires students to collect and reflect on the items they include, shedding light on the instructional improvement along with the opportunity for authentic assessments. Ideally, these tools become the nexus of instruction and assessment.

To approach the nexus of instruction and assessment, some guidelines must be followed. Paulson et al. (1991) offer eight guidelines.

1. The end product must contain information that shows student self reflection.
2. The portfolio is something that the learner does, not something done to the learner.
3. The scores and other cumulative data should be included in a portfolio only if they take on new meaning within the context of the other exhibits therein contained.
4. The portfolio must convey explicitly or implicitly the student's activities (purpose of the example, its goals, contents, comparison to a standard, and judgments).
5. The portfolio can serve different purposes during the course of the school year.

6. The portfolio can serve multiple functions simultaneously as long as they do not conflict.
7. The portfolio should contain information that illustrates growth.
8. Many of the skills and techniques that are involved in producing effective portfolios do not happen by themselves.

The first step when planning to use portfolios is to identify the desired information that the portfolio will contain and which type of portfolio will best meet this outcome. Danielson and Abrutyn (1997) identify three portfolio types: display and showcase portfolio, working portfolio, and assessment portfolio. Display portfolios are used to document the varied activities students do within the classroom. In this type, there are only photos, usually not accompanied with student or teacher comments. This collection functions like a scrapbook to share with parents, administrators, and the greater community. Scrapbooks illustrate the ongoing pedagogical activities occurring within the class. However, this type of portfolio does not document the individual's progress or development.

Showcase portfolios only contain the learner's best works. Here, students select their best works for inclusion. Students will have to spent considerable time perfecting these items. The refining process is based on the critical recommendations from the teacher. This type of portfolio presents an individualized picture of the child's performance, although not necessarily an accurate one. Reviewers of showcase portfolios might develop a skewed perspective of the learner's ability and aptitude. Like display portfolios, showcase portfolios do not contain information reflecting daily instruction.

The portfolio type that allows for a more accurate representation of how a child is growing academically is a working portfolio. Working portfolios illustrate the process of learning new concepts and transferring this gained understanding to new tasks. The work samples document the child's strengths and weaknesses in meeting certain goals and objectives. Included works will show snapshots of the learner's typical, everyday performance (Meisels, Dichtelmiller, Dorman, & Marsden, 1997). This portfolio type allows teachers to choose strategies to help the child grow and develop the desired skills and knowledge. Working portfolios contain the stages of the student's work beginning with the rough draft, several revisions based on the teacher's suggestions, and the final teacher-student edited work. These portfolios more informatively documents the child's abilities by showing the initial effort and the refinement process.

Students can take an active role in their personal progress by setting personal goals and seeing the evolution of their work over time. However, collecting samples for inclusion must go beyond documentation and move into the second process of evaluation–assessment. Gronlund (1998) believes that children as young as pre-kindergarten can recognize their own growth. She posits that working portfolios become assessment portfolios with the addition of the evaluation process. Danielson et al. (1997) state the

primary function of an assessment portfolio is to document what a student has learned. This becomes a rich assessment tool when the included samples are carefully evaluated by relating them to learning objectives or curricular goals.

Documentation for assessment purposes must be more than sampled works. Teacher comments are essential when evaluating the student's portfolio. Along with teacher comments, a carefully planned collection procedure is necessary so that teachers are not overwhelmed with meaningless or uninformative samples. Gronlund encourages portfolio designers to identify "what makes a quality piece of work or an informative work sample for portfolio collection, and identify the criteria for evaluation in order to make the portfolios an effective assessment tool" (1998, p. 9).

Children are not the only learners who work with and can benefit from developing portfolios. In- and pre-service teachers also need to understand how to use portfolios in order to effectively incorporate them into their pedagogical repertoire. In order for pre-service teachers to understand the portfolio process, they need to begin using and reflecting about the works they include in the portfolios as early as possible if its purpose is to help them become integral and conscious participants in the education process (Courts & McInerney, 1993).

Portfolios can function as dynamic representations of the individual learner as well as the environment in which learning takes place. This means that portfolios, both concept and product, can take on an infinite variety of forms, thereby reflecting the variation among learners who create them as well as the classrooms in which they are used.

Many teacher training programs are requiring preservice teachers to create portfolios for their K-12 students in addition to creating personal and professional portfolios. Often the professional portfolios are one of the exit requirements of the degree program. As a corpus of the student's work over time, many educators espouse it to be a more accurate indicator of student progress (Christie, Enz, & Vukelich, 1997; Valencia, 1990; Verkler, 2000). Copenhaver, Waggoner, Young, and James (1997) believe that portfolios offer promising advantages for the preservice teacher as well. They write, "assembling a portfolio helps teacher education students wed theory and practice as they apply what they have learned about teaching to school-specific areas." For the preservice teacher, the process portfolio best facilitates the individual's metacognitive sense of learning both in the moment and over time (Courts & McInerney, 1993). Successful applications of this process relate directly to the variety of self selected initial drafts, works in progress, and finished works. This process allows the learner to assemble and reassemble a multidimensional or multiperspective representation of learning examples, (Spiro, Vispoel, Schmitz, Samarapungavan, & Boerger, 1987) and affording numerous opportunities for the learner to think flexibly and nonlinearly about how and to what degree learning and change occurred over time (Krause, 1996).

There are many reasons why portfolios are increasingly popular in teacher education programs. Stowell, Rios, McDaniel, and Kelley (1993, p. 61) identify three they believe explain why portfolios are gaining in popularity among teacher trainers. First, portfolio assessment is authentic and dynamic, capturing the complexities of both teaching and the learning-to-teach experience in ways that standardized and static comprehensive examinations cannot. Second, the process of developing a portfolio shifts ownership of, and responsibility for learning to the learner. Third, teacher education programs are beginning to recognize that if the faculty wants their preservice teachers to be intentional about how they evaluate their student's work, then the faculty must be intentional and purposeful about how they evaluate future teachers.

Electronic portfolios

Two primary reasons for using technology are to make our daily activities easier and life more enriching. With ongoing advances in technology, teachers and teacher trainers are exploring ways to capitalize on the dynamic multimedia capabilities available on desktop computers. With current and future multimedia options available to the user, the options for portfolio construction and assessment increase exponentially.

Some might ask, "what is the advantage of having students create electronic portfolios?" The answer rests in the multimedia capabilities of computers and the Internet. Barrett (1998) argues that "the use of multimedia can address different learning strategies at one time, stimulating all of the senses to form a complete learning experience; this can only be fully represented by an electronic portfolio. In addition to stimulating multiple sensory organs, by using technology to store student portfolios, student's work becomes more portable, accessible, and widely distributed.

A few programs are designed to create multimedia presentations for both Apple and PCs. UVM's music education faculty recently decided to experiment with Macromedia's *Director 8.5 Shockwave Studio* to determine if it would be a good program for creating professional portfolios. This decision was made based on the program's seemingly limitless capabilities and ease when creating stand alone CDs, DVDs, and web files. The department purchased the program and installed it on one computer in the computer lab.

Currently, both conventional and electronic professional portfolios are acceptable representations toward the department's graduation requirement. Some faculty would like to see electronic portfolios as a requirement toward graduation. This modification, perhaps more advantageous, has not been seriously considered.

Director 8.5 Shockwave Studio allows the user to create rich interactive content that can be deployed anywhere. Files created in Director 8.5 are called movies. Director 8.5 comes with a powerful authoring environment that enables the creator to produce compelling interactive experiences

for the end user. Completed movies can be saved onto CDs, DVDs, corporate Intranets, and the Internet through the built-in program Shockwave. Director 8.5 can support various image, video, and audio file formats.

Music education majors were first introduced to this program in the elementary methods class. This is the first course in the music pedagogy sequence. There were nine students in this class, six of whom were female. The faculty agreed that student outcomes for this trial period would be to create a working template of their professional portfolio. The template would contain the portfolio's theme (as chosen by each major), student's contact information, resume, and sections for lesson plans (evidence working with students), philosophy of education, state and national music standards (linked to lesson plans where demonstrated), and performances. Their portfolios would function as assessment portfolios. Students would write accompanying reflections explaining why they chose the items included and how these exemplify the portfolio's theme. Faculty would also write comments on included items as the portfolio evolved.

All students were able to successfully meet these course objectives. Some students exceeded the faculty's expectations by including video and audio files as well as used graphics programs to enhance the look and interface of their movies. For example, one student used Macromedia's *Fireworks* to create a sectioned donut shaped icon that she placed on the main page. Each section is a different color and functions as a "hot spot," linking the end user to the required portions of the portfolio as well as to other director movies and web links (see Figure 1). Another student used Adobe's *Photoshop* to create a color-cycling saxophone (his primary instrument) with note icons bubbling out of the instrument's bell (see Figure 2).

Director 8.5 comes with several tutorials that explain and guide the learner through the program's basic features and tool palettes. These tutorials give the new user tasks to perform that guide them in the creation of movies using various animated graphics, sound, and a 3-D world. Director 8.5's tutorials are included in two forms, in the Help tool and a book version. These tutorials are relatively simple to follow and are clearly presented with numerous sequential figures of what the user will see on the screen. Although relatively simple to learn, this class experienced some challenges. The main challenge encountered had nothing to do with interpreting the instructions, but with the user. One of the first steps in the tutorial is "once the sample lesson is opened, choose 'save as' and save this file with your name." Often our students failed to do this and when they saved their work later, either after completing the tutorial or somewhere in the middle of the lesson, the original file was changed, reflecting their work. When the next student began the same tutorial, many of the tasks had been completed or essential files were either missing or changed beyond the grasp of correction. In order to remedy this, the faculty would have to reinstall the program. Such events were frustrating for students and an inconvenience to faculty. Despite the efforts of the faculty and some students, this problem persisted throughout future tutorials.

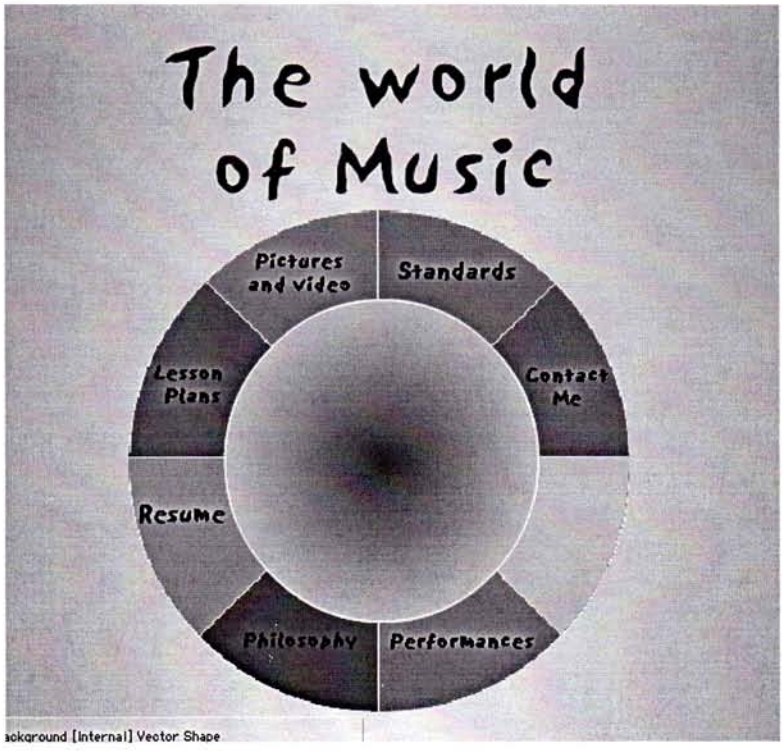

Figure 1. Student portfolio sample as sectioned doughnut-shaped icon.

Figure 2. Student portfolio with bubbling saxophone.

Students completed an informal faculty designed survey that queried them about their overall attitudes toward electronic portfolios and using Director. The survey consisted of 14 Likert-type questions. Each question had an accompanying five-point scale, 1 = strongly disagree to 5 = strongly agree.

Of the nine students in the course, seven completed the entire survey. Analysis of the surveys shows that all students indicated that requiring portfolios of preservice teachers is beneficial. Most students (55%) expressed positive feelings toward electronic portfolios. Attitudes expressed toward Director 8.5 were more varied. When prompted "I have enjoyed using Director 8.5 to create my portfolio," 33% of the students selected "strongly agreed," 33% of the students selected "agree," and 44% of the students selected "disagree." All who expressed disagreement cited the above challenges with the tutorials as the primary reason for their response.

Despite the few challenges encountered during this trial stage, many positive outcomes were observed. Students who grew very comfortable with Director 8.5 began helping their classmates. This technical support greatly relieved the faculty as well as cultivated cooperative learning. Students worked together to complete the tutorials, share new discoveries about Director 8.5, and began working together on many other class assignments. A community of education majors had begun to form. Before this, music education majors seemed to exist independent of each other. This was also evidenced by the lack of interest in the student MENC chapter, including the elected student officers. However, toward the end of the semester, the faculty noticed an increased interest among students in the class about the student chapter as well as the elected positions. This semester was the first in several years that students competed for elected offices. After votes were tallied, the newly elected officers began to hold end-of-the-year meetings to discuss events for the upcoming year. Their enthusiasm began to spread throughout the music education student body. As a result, these meetings were well attended.

I do not believe that this program was the sole reason for the changes in the student climate; however, it is conceivable that because students began to work and share in a new way that it stimulated interest, a need, and created an environment where other interests could be exchanged.

Overall, the faculty believes that using Director 8.5 was successful. We will encourage our students to continue using Director 8.5 to complete their professional portfolios. The faculty is devising solutions to the challenges encountered during this semester. In addition to trouble shooting, we plan to establish detailed expectations.

From our discussions, we have identified three possible solutions to the challenges encountered during this semester. First, we should provide a hard copy of the tutorial in the computer lab so that students do not have to toggle between screens. Second, we should set aside part of one class session for a teacher-led overview of the program's basics. Third, we should allow time during the instructor guided tutorials to ensure that each student

understands knows how to follow the program's lessons and save his or her own working copy of the lesson.

Some of the future directions were proposed by our students. The new MENC student officers suggested to the music education faculty that periodic workshops should be offered on Director 8.5. They felt that they had only scratched the surface of this program's capabilities. Furthermore, the music education faculty will send out topics to the music education listserv that students will rank. From these data, the faculty will offer three or four two-hour workshops on the most requested topics.

Electronic portfolio expectations are divided into two categories: academic and applied. The academic items include all written documents that include, but not limited to a philosophy of education, lesson plans, original compositions (e.g., Orff arrangements), and essay assignments from other classes that tie into their portfolio's theme. The applied items include still pictures of students working with other students, video and audio files of their peers and field teaching, and solo or small ensemble performances. The faculty decided to include this requirement to enable the student to create a document that more broadly represents the student as an individual, a musician, and a music educator.

The University offers several free workshops each semester on various scanning, audio editing, and video editing programs. Students should be able to attend these workshops at their convenience and with the help of a specialist. In the upcoming semester, students will learn how to publish their movies to the web and upload these files to the University server. They will also learn how to create CDs and DVDs of their movies for viewing on any computer.

This preliminary attempt at using Director 8.5 as a tool for creating professional portfolios was an overall success. Both faculty and students are becoming excited by the possibilities now being discovered. Some students believe this program can be an effective tool for teaching and reinforcing various music concepts and skills, e.g., ear training, sight singing, and instrumental fingering.

The application of electronic portfolios is extremely varied. The best use for a particular institution depends on several factors. Faculty considering using Director 8.5 might consider the following factors: the assessment process, the possible stakeholders, the institution's and state's licensure requirements, and the time needed to learn and teach this program.

Clearly, more work and time using this program is required in order to identify the best ways of teaching it to students in consideration of the academic time constraints. Our goal, in addition to helping the students use this program, is to provide rich and varied opportunities for them to experience and better grasp the capabilities of electronic portfolios as powerful tools for the learner and the educator. Researchers might consider comparing the effectiveness of Director 8.5 to other tools for developing professional electronic portfolios.

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