Sampling and Looping Digital Audio

Richard Repp, Georgia Southern University

The procedures of sampling and looping digital audio have become an accepted method for producing rhythm tracks in today's popular music. Until recently schools have been less likely to teach digital-audio based techniques in classrooms, relying on similar MIDI tools instead. Reasons for the choice of MIDI over digital audio usually focused on the expense of digital audio software, the need for high end processors, and the complexity of digital audio. These hurdles are no longer existent, as the computers of today can easily handle processing of digital audio, and the software involved is inexpensive, or even free. I will demonstrate how to produce looped audio for no additional cost to a school system that already features computers with a sound card. Using the Pro Tools free software and public domain audio files easily found on the Internet, I will review the procedure of putting together a simple percussion part one instrument at a time and then adding effects to that loop. I will close with a discussion of how to translate these loops into an actual song

SIXTH ANNUAL NATIONAL SYMPOSIUM ON MUSIC INSTRUCTION TECHNOLOGY (2004)

An Electronic Music Class as an Alternative to a Music Appreciation Class

Robert Haselhuhn, Madison KS High School

Four years ago I was hired to teach instrumental music at Madison High School. Along with my other duties I was given two periods of Music Appreciation. The administration had decided the year before to change the regular Music Appreciation class into an Electronic Music (E-Music) class. They had budgeted $5,000 to make the change.

When I accepted the position, the administration gave me $5,000 and told me to buy what I needed to begin an E-Music class. My experience with computers and music software was limited, so I did some research to make a better decision. Finally, I bought hardware and software, and began to plan for my class.

My expectations were too high for the class, and the first year was a disaster. Since then I have made changes that better reflect my students' abilities and their musical tastes.

My presentation will cover those first expectations, my changes in hardware, software and class expectations since that first year. I will bring a computer station to show what we have, and what we do with it.

I will show how the class can be set up on a limited budget, yet give the participants an opportunity to work with the hardware and software. I will show student work, and distribute handouts on different computer hardware choices, software choices and textbooks that are now available for an E-Music class.

Technology in Undergraduate Music Education

Nancy H. Barry, University of Oklahoma

Instructional technology is an important component of the music education curriculum. This is evident in published standards for K-12 and collegiate level music education, such as MENC's (1999) *Opportunity to Learn Standards for Music Technology.* The 1989 College Music Society (CMS) Report, *Music in the Undergraduate Curriculum: A Reassessment,* listed "a familiarity with technology" among the seven essential competencies the music student needs to develop "in order to participate in the musical life of the United States" (p. 16). The National Association of Schools of Music (NASM, 2003) also includes technology among competencies required for accreditation of all professional baccalaureate degrees in music and all undergraduate degrees leading to teacher certification. The widespread endorsement of technology by the above organizations gives rise to the question of "how" these standards are actually being addressed within undergraduate music education programs.

Purpose

This study reviews technology in the undergraduate music education curriculum. Specific research questions address:

1. Levels of funding and support for music education technology
2. Specific software and hardware applications addressed within the curriculum
3. Required and elective courses emphasizing technology
4. Certifying agencies that influence technology standards

Method

This presentation reports results of a study of undergraduate music education programs in the Midwestern United States. Data collection in this descriptive study includes document analysis (university bulletins, course listings, Websites, etc.) and a brief email survey administered to a member of the music education faculty at each institution.

Results

Preliminary results indicate that, despite widespread endorsement of technology by prominent music and music education organizations, integration of music instruction technology within the curriculum remains limited. While use of applications such as word processing and notation software is quite common, use of dedicated music education software is rare. In many cases, technology use is (or was) associated with a particular faculty member.

> None of our courses place[s] particular emphasis on technology . . . We did develop electronic portfolios for a couple of years, but then the faculty member who initiated that endeavor left, and the project fell by the wayside. So much of the technology issue seems to be driven by faculty interest and/or expertise rather than a logical examination of necessary technology competencies or most appropriate integration of technology in existing courses. . . [excerpt from email survey response received on 2/23/04]

These findings suggest that the field of collegiate music education has yet to "arrive" in terms of technology integration within the undergraduate curriculum. In most cases, technology standards established by accrediting agencies are being met at a minimal and relatively superficial level. More comprehensive standards for technology integration within the undergraduate music education curriculum are needed. Music education faculty could benefit from clear guidelines and detailed recommendations for hardware and software. The present study is limited to one region. Additional research is needed before results can be generalized to a larger population.

Using Technology to Provide Alternate Methods of Assessment in the Music Classroom

Beth Gigante Klingenstein, Valley City State University

Valley City State University is known for its spirit of innovation. We were the second university in the nation to go completely laptop, with every student and faculty member being issued a laptop computer. It is expected that technology is used in every class, and syllabi list the uses for technology in each course. This emphasis on technology has also fostered a heightened awareness of new and innovative approaches to pedagogy.

About seven years ago, discussions began concerning whether or not our graduating students had the skills that employers most desired. Perhaps a student received an "A" in chemistry, but could we say that that student was well prepared for the work force? We decided we needed to identify the skills we most wanted our graduates to have, and also to devise a system for assessing those skills in our students.

Because of this emphasis on abilities and skills, there has been a huge change to the approach to teaching, learning, and assessing at Valley City State University. The changes have not always been easy and at times have been strongly questioned. The areas discussed in the presentation given at the National Symposium on Music Technology Instruction 2004 Conference included:

- Abilities and Skills
- Curriculum Mapping
- Technology Support and Training
- Examples

Abilities and Skills

The first thing that the Valley City State University (VCSU) faculty believed was needed, as we planned this new approach to assessing, was research on alternative methods of assessments that already were in place. Two existing models were of particular help to the VCSU faculty.

The first model was the Secretary's Commission on Achieving Necessary Skills (SCANS), developed by the US Secretary of Labor. In 1990, their mission was to define the skills needed for employment, propose acceptable levels of proficiency, and suggest effective ways to assess that proficiency. Descriptions of the Skills were well presented by the Commission and they published a list of Skills which were divided into work competencies as well as foundation skills:

- Basic skills
- Thinking skills
- Personal qualities

There were too many skills listed within each area for our purposes at Valley City State University, so we decided to filter down the choices to fit our needs.

The second model that was given special attention was the Alverno College Ability-Based Learning Program in Milwaukee. Alverno had been developing and implementing ability based undergraduate education since the early 1970s.

We had hoped to find a good model for using abilities and skills for assessment, but found that the SCAN Commission did not offer a definitive assessment plan, and Alverno was using a paper and interview assessment of their Abilities. We needed to develop our own system for assessing these skills. The digital portfolio was the method of assessment we chose.

Digital portfolios were initially viewed by VCSU as expanded dossiers. We told our students they would be like a more elaborate and impressive resumé. It did not take long for us to define the digital portfolio more as an assessment tool, to be used for faculty assessment of student growth as well

as self assessment of personal growth by the students. As such, they became an assessment tool for "soft skills" and growth.

Our decision to use digital portfolios was grounded in the fact that we felt that the portfolio:

- focuses on authentic performance
- can be individualized easily
- shows evidence of thinking
- communicates in different ways
- can be edited easily
- need not be linear
- includes various types of media

Curriculum Mapping

With our decision to use Abilities and a digital portfolio in place, we had a number of choices to make:

- Which Abilities should we choose?
- Which Skills would be appropriate?
- How should we define each Ability?
- Would we have levels of competencies?
- What would each division require?

Campus wide roundtable discussions were held on the choices of Abilities and Scan Skills. Abilities Committees, each with divisional representation, were formed to thoroughly discuss options and wording for each Ability and Scan Skill. As a result of these meetings, we no longer use the initial Scan Skills, but have developed a more condensed set of Abilities and Skills, appropriate to our needs. The final campus-wide Abilities we chose included:

- Aesthetic Engagement
- Collaboration
- Communication
- Effective Citizenship
- Global Awareness
- Problem Solving
- Technology
- Wellness

Each Ability includes two to five Skills. For example, the skills for Collaboration are Positive Interdependence and Leadership. There are five levels of competency for each Ability: level four is required in the Portfolios. Instructors assign certain projects and list the Ability, Skill and Level of each project. Projects must be in digital format, and the students choose which of their final projects they wish to include in their Senior Portfolio.

The final Senior Portfolio must be approved by faculty in the student's major, and is a requirement for graduation.

Projects in the portfolio are organized around an appropriate Ability, Skill and Level, and would be listed as such. For example, the wording for a certain project might be: "This project fulfills the Ability of Problem Solving, Level Four, and the Skill of Creative Thinking."

In music, our students must fulfill the following Abilities requirements:

- Aesthetic engagement: Visualization
- Collaboration: Positive interdependence *or* leadership
- Communication: Performance *and* spoken
- Problem Solving: Creative thinking *or* decision making
- A fifth ability of the student's choice

To assist the students with meeting their Abilities requirements, the Music Department mapped projects in every class, matching projects with abilities. We devised two systems for listing class projects, one showing mapped projects that fulfill Level four of our required abilities, and one showing mapped projects which fulfill Level three or lower, or an ability that is not required by us.

The Music Department had an excellent assessment plan already in place. Rather than replace that plan, the existing plan was mapped to show the parallel assessment that can be done through the Abilities. For example, a senior recital, which is part of our traditional assessment plan, now has been mapped to fit the following Abilities, Skills, and Levels (see Table 1).

Table 1

Assessment Plan Mapped to Fit Student Abilities, Skills, and Levels.

Ability	Skill	Level
Communication	Performance	4
Wellness	Self Worth	4

By assigning a parallel set of Abilities and Skills, the Music Department was able to retain our well thought-out, traditional system of assessment, while also assessing some of the abilities and skills which were part of the new system of assessment.

Unmapped Projects may also be used on the portfolio. Students can have an unmapped project approved for their Senior Portfolio by submitting

a request to include that project. Acceptable unmapped projects might include projects from classes at a different university, work experience, life experience, travel experience, etc., or projects from classes at VCSU which were not mapped to fulfill a requirement, but which the student feels does meet a requirement. Many times students find that they have done such a good job on a particular project that they feel it should be included in the portfolio. Thus, the submitting of the required form can allow these special projects to be accepted as part of the portfolio.

Technology Support and Training

Some faculty members at VCSU come with sophisticated technology skills, and others with no technology skills. Once here, there is not a member of the VCSU faculty who can stay outside of the technology loop. It is not possible to teach at such a technologically savvy university, and not use technology. On a campus with ubiquitous computing, even the reluctant faculty member must become involved. Some faculty members who are new to technology may feel a sense of panic about getting behind. Even those who come to VCSU having used technology fairly regularly will need to learn a number of applications specific to VCSU.

Many of the Music Department faculty members were initially reluctant to embrace many uses of technology. Eventually, the Music Department realized that in order to be seen as a team player, rather than "different" from the rest of the campus, it was necessary to get on board. As a department, we also realized that the Senior Portfolio is particularly well suited to music majors, as viewers can watch actual video of recital performances, ensemble collaboration, original composition performances, conducting and student teaching.

Fortunately, there has been exceptional technology training at VCSU. Faculty members can learn new technology applications through our Summer Institute, which focuses on innovative instruction, through weekly technology training sessions, by e-mail with "how-to" attachments, on a VCSU site with "how-to" documents, by receiving help from colleagues, and even by asking students for help. The one factor limiting our learning is time, as we all must work around busy schedules.

The VCSU Campus-wide initiatives to change the nature of teaching have produced results. We have an increased use of technology and there has been a decline in lecture-based classes. There is an increase in project-based classes, journaling and student reflection.

Examples

A handout outlining the new approaches to teaching Music History was presented, listing the multiple chapter projects, as well as other innovative uses of technology presently in use for the Music History Class. Some of the changes in Music History include:

- Music history classes have become more project based
- Each chapter has a hands-on project
- Some projects are mapped, some are not
- Students sometimes choose to combine a number of projects into one portfolio project that reflects a larger growth in a certain Ability
- Students are expected to write reflective statements about all projects to assess their own growth
- Blackboard software is used in a hybrid format, allowing Music History to be partially on-line

For example, some of the projects now included in first semester Music History are:

- Composition of a Plainchant (Finale)
- Composition of a Color and Talea (Finale)
- Men of the Renaissance (PowerPoint)
- Renaissance Instruments (PowerPoint)
- Music of Diverse Cultures (PowerPoint)
- Baroque Composers (PowerPoint)

The last portion of the NSMIT presentation included the actual viewing of a series of digital projects, including projects from actual Senior Portfolios. During the viewing, discussion also covered the Abilities each project fulfilled, whether the projects were mapped or unmapped, and the student assessments which were included with the projects. Digital projects which were viewed included:

- The Crumhorn (PowerPoint)
- Music of China (PowerPoint)
- The Music of Clara and Robert Schumann (Web page)
- Assessing Piano Method Books (group Web page)
- Music and Art of Africa (PowerPoint)
- Developing a Summer Music Camp on Native American Music (PowerPoint)
- Developing a Summer Music Camp on Jazz (PowerPoint)
- The Nation Celebration (PowerPoint)
- Music through Time (Music Theory Web page)
- Small Ensembles Collaboration (PowerPoint)
- Performance Assessment (PowerPoint)
- Student Teaching–Vocal Methods (PowerPoint)

This process of change has been a challenge for the whole University, starting with the day the faculty at VCSU first received the new laptop computers. Most faculty members now support the use of Abilities and the digital portfolios. The spirit of innovation at Valley City State University is

an ongoing process, and one which provides opportunities for continual growth.

Composition in the Choral Performance Classroom

Cynthia Peterson and Tom Kjelland
Valley City ND Public Schools

Composition is recognized as one of the National Standards for music, but in choral performance groups, it is often difficult to find time to fulfill this requirement. In our secondary school, composition projects are required throughout our music curriculum, requiring student projects to be presented at each grade level. In seventh grade, the focus is on learning computer notation software, expressing emotion through music composition, and the final project includes a composition produced and sung by an entire choir. The eighth grade choir composes music for their own opera using the model of "Creating Original Opera" from the educational branch of the Metropolitan Opera Company in New York City. Ninth graders produce simple melody lines with lyrics using expressive tools working in groups of two. Sophomores orchestrate their own melodies with harmony, bass, and percussion lines. Juniors use presentation software to study the form and melodies of existing pieces. Senior projects vary from writing their own opera to collaborative projects with elementary students. This year the seniors are creating an original music video [Editor's note. Contact the authors for detailed information].

Creating Basic Flash Documents: Buttons, Multimedia, and Online Quizzes

Jane Kuehne, Auburn University

The purpose of this presentation was to provide new and beginning users of Flash with basic functions of the software with specific regard to creating buttons, multimedia presentations, and online quizzes. The presenter assumed that the participants had at least a basic working knowledge of terminology and World Wide Web processes and applications. Examples of the presenter's own work were shown as examples in this presentation. In addition, specific information about current purchase prices and options were provided to attendees.

A free trial version of Flash software can be downloaded and used for 30 days. This allowed use of the software during the presentation. The download is approximately 76 MB. It includes both Flash MX 2004 and Flash MX 2004 Professional. If you choose to download Updated Help by clicking the

"Update" button in the Help panel, this may increase the amount of disk space needed by the product. This product must be activated over the Internet or phone prior to use. Windows 98 SE users must have Microsoft Internet Explorer 5.1 or later in order to activate over the Internet. Visit the Product Activation Center to learn more about activation.

Some features require QuickTime 6.3 or QuickTime Pro 6.3. During the installation of QuickTime, select the "Recommended" installation type to install the components required by Flash. QuickTime can be obtained at www.quicktime.com.

Specific "how to" information was provided for the audience, showing examples of previous work and steps toward learning Flash. In addition, current purchase information was provided [Editor's note. Contact the author for more detailed information].

Flash will play back in the following Browsers (see Table 1).

Table 1

Browser Availability for Flash Playback.

	Windows Browser
Windows NT	Microsoft Internet Explorer 6.0, Netscape 7.x, Mozilla 1.x, CompuServe 7, and Opera 7.11
Windows 98	Microsoft Internet Explorer 5.x, Netscape 4.7, Netscape 7.x, Mozilla 1.x, AOL 8, and Opera 7.11
Windows Me	Microsoft Internet Explorer 5.5, Netscape 4.7, Netscape 7.x, Mozilla 1.x, AOL 8, and Opera 7.11
Windows 2000	Microsoft Internet Explorer 5.x, Netscape 4.7, Netscape 7.x, Mozilla 1.x, CompuServe 7, AOL 8, and Opera 7.11
Windows XP	Microsoft Internet Explorer 6.0, Netscape 7.x, Mozilla 1.x, CompuServe 7, AOL 8, and Opera 7.11
	Macintosh Browser
Mac OS 9.x	Microsoft Internet Explorer 5.1, Netscape 4.8, Netscape 7.x, Mozilla 1.x, and Opera 6
Mac OS X 10.1.x, Mac OS X 10.2.x, or Mac OS X 10.3.x	Microsoft Internet Explorer 5.2, Netscape 7.x, Mozilla 1.x, AOL 7, Opera 6, and Safari 1.0 (Mac OS X 10.2.x only)

The Potential for TabletPCs in Music Education and Technology for Pedagogy Aural Skills

Kelly Demoline, Kelly's Music and Computers

Tablet PCs offer an innovative way of using technology to teach music. The use of pen and voice input, the form factor and special features of the operating system allow educators to take advantage of the existing benefits of technology while minimizing the problems associated with desktop or laptop computers. Tablet PCs also present some new opportunities for integrating technology into music education.

A tablet PC is similar to a laptop, but has two unique features. First, you can use a pen on the screen or use your voice to interact with the computer. Secondly, the device is in a convenient form that allows you to hold the computer as if it were a clipboard. A work surface is not required as Tablet PCs do not require a keyboard. The screen becomes the sole point of interaction, negating the need for a desk or your lap. A Tablet can be used in either landscape or portrait mode, and most Tablets provide a dedicated hardware button for switching modes, depending on how you want to interact with the computer.

The concept of pen computing has been around for a while, but Microsoft recently has tried to bring it into the main stream by building a special version of Windows XP Professional packaged as Windows XP Tablet Edition. The Tablet PC Operating System provides native support for new concepts such as "digital ink," allowing you to not only use your pen like a mouse, but also as a device for inputting text rather than using a traditional keyboard. In addition to using a pen to interact, Microsoft has also incorporated voice recognition technology for navigation and dictating text into a program. Both handwriting and voice recordings can be stored either in their original format, or converted to a digital format for searching, printing, or sharing with other programs.

There are two main types of Tablet PCs, "slate" or "convertible." All Tablet PCs will run Microsoft's Tablet PC Edition of Windows XP supporting input using a special pen. A slate is a true tablet and does not include a keyboard. They are usually lightweight with smaller screens–typically a 10" or 12" display and often do not include an optical or floppy drive. Most slates include USB ports; however, not many other special options or features are available. You can, of course, connect a USB mouse, keyboard, CD burner or other peripherals.

A convertible Tablet is essentially a laptop that can be converted into a Tablet PC. With the screen oriented like a regular laptop, the keyboard and touch pad can be used for data entry. By rotating the screen and folding it down over the keyboard, it becomes a tablet with the keyboard unavailable. Slates have the advantage of being small and lightweight, whereas the convertible Tablet offers the versatility of a laptop for users who can type faster

than they write, or want to watch DVD, or burn CDs without having to bring along extra peripherals.

The key differences between a laptop and a tablet are related to the form factor and input methods, and these are also the primary benefits. The form factor of a Tablet PC takes all of the potential benefits of technology and makes them *accessible* in a teaching or rehearsal situation. It also introduces some new opportunities unavailable with the traditional paradigm of sitting in front of a display and keyboard.

The traditional requirement of sitting in front of a display and keyboard necessitates a change from the natural interactions in teaching and music making. Music teachers usually do not teach sitting from a desk, nor do students learn at a desk. The form factor of a Tablet PC can easily take the place of a score, sheet music or a notebook without being intrusive or requiring the user to move to a computer. As a result, technology becomes less intrusive, which also can help a Tablet become less intimidating than a regular computer.

The lack of a keyboard not only allows a Tablet PC to sit upright on a music stand, but the portrait mode allows it to be oriented like a sheet of paper. This makes working with programs such as Band in a Box or SmartMusic a more natural experience for students. The interaction between an instrument and the computer becomes as familiar as reading music on a music stand.

Although a laptop can be helpful to teachers who require technology to be mobile, unlike a laptop, the Tablet PC doesn't require a lap. This allows the teacher to move around the classroom and have access to all of the information traditionally stored on their computer. More than just accessing that information, scores, notes, grades, and seating charts can be created or edited on the fly without interrupting the current activity to get to a keyboard–everything can be done with a pen or voice.

Implementing a Tablet PC in a band class offers a number of opportunities for both the teacher and students. At the beginning of class the teacher can use the Tablet PC in conjunction with a program like GradeQuick, to take attendance by tapping on the student's picture in the seating chart. A Tablet PC coupled with a projector can make a great white board for writing rehearsal plans to display to the class. Although this doesn't sound like an exciting Tablet PC application, you can use the pen to easily add notes to yourself or to the students as the rehearsal progresses. For example, specific goals for a rehearsal displayed in PowerPoint can be checked off or circled using the pen to provide a summary of accomplishments and future goals at the end of the class. You can easily add voice recordings or even use the recording feature to make a crude, but useful recording of segments of a rehearsal for future reference.

Microsoft's Journal program built into the Tablet OS allows anything to be printed or scanned into the program. Once a file is in the Journal, it can be marked up by adding hand written or typed notes, highlighting sections or adding pictures or diagrams. These annotations can be in various colors

and can be saved for future reference. For example, students may learn a new scale by rote, and then see the notation displayed with an overhead projector. By using a notation program and then using the virtual print feature of Journal, the scale can be displayed on screen with transpositions for each instrument. The annotation capabilities of Journal then allow an analysis to be drawn on screen with the pen.

Journal could also be used to scan and annotate scores, saving these notes for the next rehearsal, or deleting certain ones when they are no longer needed. Although you can mark up a traditional score in a similar manner, it is very difficult to undo those markings. Saving multiple copies of a score would allow you to add notes to a score during a rehearsal using a different colored ink for later review without affecting your master score and its annotations. Another interesting approach is to use a projector and mark up the score to demonstrate analysis techniques to students. This will encourage students to become interested and involved in critical listening and analysis–especially if they have their own Tablets that allow them to mark up the score themselves.

The mobility of a Tablet PC offers the advantage of "in context" assessment during a rehearsal. Use any commercially available grading software, or custom design evaluation forms in OneNote or InfoPath to allow the use of the pen as if you were filling out a form. Instead of having to record your marks into a grade book, the Tablet will let you automatically enter your grades. Additionally, you can choose to convert your hand writing to text for the student or for your own records. Aside from not having to re-enter data into your computer later, this allows you to do more authentic, task based assessment in a less intrusive manner. A Tablet can also enable peer or self assessment where students can enter their comments into a form on a tablet PC. The recording feature will allow you to make quick audio clips of a particular student performance or a voice note to yourself or the student.

Students can also take advantage of tablet PCs for learning activities such as dictation. Rather than have students use paper and pen, a notation program could be used to enter perceptions of the music dictated. Students can then playback their version to compare it with their aural memory and make any changes required. Students could also use Microsoft's OneNote, which provides a staff template but no playback or intelligent scoring capabilities. This would prevent students from hearing their notation, forcing them to rely solely on their aural memory and auditory skills. In both cases, work can be submitted electronically (perhaps even wirelessly) to the teacher for later assessment. A well planned series of dictation exercises over a period of time, integrated with your repertoire will allow students to eventually collect a number of musical phrases and ideas that can be referred to in the future. There can be many other uses for this musical scrap book, and encouraging students to use their Tablets to write down a favorite "lick" they hear will help students develop their own notebook of ideas to use in composition and improvisation.

In-class student use of technology is not unusual in other subject areas, especially for schools that provide students with laptops. Tablet PCs can extend those opportunities to the music class. Embedded technology could provide your students with access to theory and ear training programs, Sibelius, Reason or other creativity programs. Tablet PCs on the music stands of our students is a real possibility.

The Tablet also makes a great collaboration tool, allowing students to work together with notation based or other creativity programs such as Reason. Computer based recording can become more mobile and accessible with a Tablet PC. A cardbus soundcard, such as the Indigo I/O, offers high quality recording and playback without the need for an external power source. This can be much easier than setting up gear and gives students the opportunity to immediately listen and share their music with others.

Currently the only disadvantage of a Tablet compared to a similar laptop is that there is a small price premium to pay for the added cost of the screen digitizer and pen. Over time, these costs will be reduced, and at that point the Tablet should move from a niche product found mostly in education and medicine to something more widely used. Microsoft plans to incorporate all of the additional features found in the Tablet PC into the core operating system when the next version of Windows is released. This demonstrates Microsoft's commitment to the platform, and their belief that the Tablet will become just another computing device. The option of a slate form factor and a pen for input will be a common choice for consumers to make.

Tablet PCs offer the benefit of input methods and a non-intrusive form factor that make the use of technology more natural in a musical setting. Tablet PCs provide educators with immediate access to information and data entry, while support for Digital Ink makes it a useful tool for presenting information and storing annotations for future reference.

Evaluating Music Instructional Software

Don R. Crowe, South Dakota State University

Background and Classification of Music Instructional Software

The author classifies music instructional software in two ways: by the type of material presented and by the approach used by the designer for that presentation. It should be noted that this classification applies only to software packages specifically designed for instruction of the user, as opposed to those primarily designed for specific non-instructional purposes such as notation, management, accompaniment, and sequencing. Some of the latter will, however, be addressed in the third section of this paper.

There are four types of material covered by instructional software packages: music fundamentals, aural skills, music history and appreciation, and music pedagogy. A fifth category is comprised of combination

packages in a format called interactive multimedia. Music fundamentals packages address basic notation (staff and pitch names, note names and note values); symbols (i.e., key signatures, time signatures, and accidentals); the structure of intervals, scales, modes, and chords; and terminology. Aural skills packages deal with basic discrimination (same/different, higher/lower, step/skip); interval, scale, mode, and chord recognition; rhythmic, melodic, and harmonic dictation; error detection (or aural/visual discrimination); and tuning and intonation. Music history and appreciation software addresses major composers and musical works; style periods, dates, and countries; and instrument names and characteristics. Music pedagogy software focuses on rhythm reading; sight reading; wind instrument fingerings, string techniques, and percussion rudiments; keyboard and guitar introduction and practice; jazz improvisation; score study; error detection (at a more complex level than above); and conducting. Interactive multimedia applications may address any of these in any combination.

Software developers have used five basic approaches to the delivery of this information. There are tutorial packages, those that provide drill and practice, packages that focus on testing, games, and exploratory software.

An Approach to Evaluating Music Instructional Software

When evaluating software for use in the classroom, there are a number of general questions the music educator must answer. These include:

1. What objectives, concepts, or skills are addressed by the package? Are these what are desired for the purpose in mind?
2. What instructional strategy is used? Is that strategy appropriate to the desired purpose?
3. How clear is the presentation? Is the material presented on a level appropriate to the target audience?
4. How transparent is the interface? Does the software or hardware get in the way of instruction?
5. How easy or intuitive is the software to use? Does it follow convention, or develop its own methods of navigation and interaction?
6. What is the method of interaction with the computer? Is that method appropriate for the setting, the students, and the available hardware?
7. What levels of individualization are available? Does the developer provide reinforcement and branching based on ability or interest, or is the material presented in a linear, one-size-fits-all manner?
8. How helpful to the student is the feedback provided by the program? What is its quality?
9. What is the quality of student record keeping provided?

The author has developed an evaluation form based on the classification approach and questions above. The form includes checklists, Likert-type ratings, and open-ended questions in an attempt to provide a vehicle for the direct comparison of like packages. The intent of the author was to develop a form which would be easy for music educators to use and adaptable by them to their particular situation, and which would provide a simple method of comparison between packages under consideration for their programs.

The form is comprised of seven sections:

1. Reference Information
2. Hardware Requirements
3. Curriculum Integration
4. Program Content
5. Computer and Student Interaction
6. Summary of Strengths and Weaknesses
7. Other Comments

In the Reference Information section the title, author, publisher, version, price, lab pack/multiple copy availability, vendor, and contact information can be recorded.

In the section dealing with Hardware Requirements the evaluator notes whether the program requires or is available for Windows or Macintosh, as well as the requirements for the minimum operating system, RAM, free hard drive space, MIDI (and whether MIDI is optional), CD-ROM, microphones, and any additional requirements. Space is also provided to note the format–disk, CD-ROM, or download–in which the package is available.

The Curriculum Integration section begins with a prompt for the evaluator to comment on the package's intended age or grade level as well as settings for which it is designed, its range of content and difficulty levels, learning styles it addresses, prerequisite knowledge and skills the students will need to use it, and any specific objectives desired by the evaluator. Two five-point Likert-type scales are provided for the user to rate the appropriateness of the software to the age level and course for which it is being considered.

In the Program Content section the evaluator notes the objectives, skills, and concepts addressed by the software (music fundamentals, aural skills, history/appreciation, and/or pedagogy) and the instructional strategy employed (tutorial, drill and practice, game, testing, and/or discovery/exploratory). Space is provided for notes on the clarity of presentation of the material, including the look of the screen, graphics, text, menus, instructions, keystroke commands, musical examples, and quality of sound, and four more Likert-type scales are presented. These are used to rate whether the software is error free, easily understood, and easy to access, as well as the quality of the program's sound.

There are five subsections in the Computer and Student Interaction section: Method of Response, Individualization, Feedback, Student Record Keeping, and Documentation and Support. The Method of Response subsection is a checklist, with options for computer keyboard, keyboard overlay, mouse, microphone, MIDI keyboard, and any special hardware required. The other four subsections consist of Likert-type scales. The Individualization subsection provides scales for rating the software's adjustability according to ability level and branching based on response. The Feedback subsection allows the evaluator to rate the multiple response options offered by the software, its feedback display, and its feedback graphics and/or sound effects. The Student Record Keeping subsection has scales for rating the display of student scores and the permanent record of student scores or completion, and the Documentation and Support subsection allows for rating the software's manual and instructions.

The last two sections are open ended and provide an opportunity for the evaluator to integrate all of the information and impressions gained from the evaluation. The purpose of the Other Comments section is to provide a place for the evaluator to note whether the program is, for example, excellent for testing when the evaluator needs tutorial software, or requires hardware or an operating system which the teacher does not have at present but might wish to acquire.

A Synopsis of Evaluations by 39 Practicing Music Educators

In the late summer of 2003 two half-week workshops were held for practicing music educators at South Dakota State University. These workshops consisted of an overview of MIDI, Digital Audio, and Instructional, Accompaniment, Management, and Notation software. Thirty-nine participants were required to evaluate a minimum of four packages, with a possible maximum of six. This was not designed as a rigorous research study, but as an opportunity for the participants to evaluate packages which they thought might be useful in their own situations. Forty separate packages were evaluated, and there were a total of 229 evaluations. Several things should be noted about the evaluations:

1. The participants were not limited to evaluating instructional software, but were encouraged to evaluate any package they found interesting and to use the form accordingly.
2. Some packages were evaluated by only one participant, and not all packages were evaluated on all points listed above. Finale and Sibelius, for example, were not rated on student record keeping.
3. Participants were asked to rate the software based on their needs. As a result, several judged packages' course- and age-appropriateness based on their situation as opposed to the packages' stated target audience.

4. Since the majority of the participants were predominantly interested in tutorial, drill and practice, or notation software, most rated games very low.
5. The ratings were very high, with a mean overall rating of 3.55 and a median of 3.43.

Figure 1 indicates the range of ratings.

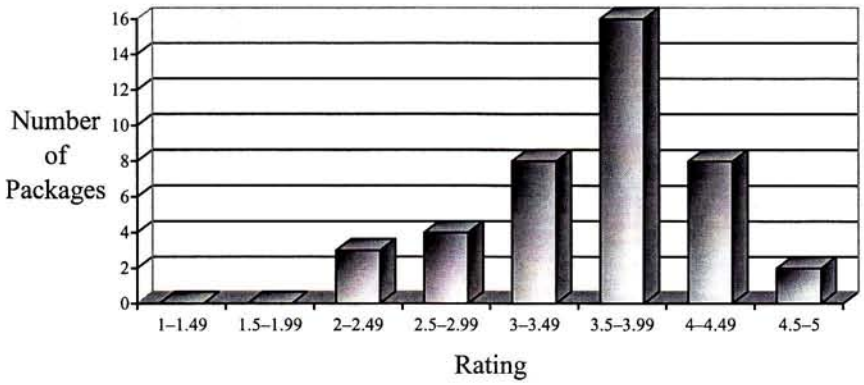

Figure 1. Number of Packages by Ratings.

The average ratings for all software by section of the evaluation form are shown in Table 1.

Table 1

Overall Ratings by Section and Subsection.

Section or Subsection (Number of packages rated)	**Items Rated**	**Rating**
Computer Integration (40)	Age Appropriate, Course Appropriate	3.91
Program Content (40)	Error Free, Easily Understood, Ease of Access, Sound Quality	3.91
Individualization (38)	Adjustable for Ability, Branching Based on Response	3.15
Feedback (37)	Multiple Chances for Response, Informative Display, Graphics and/or Sound Effects	3.39
Student Record Keeping (30)	Student's Score Displayed, Permanent Record of Student Scores/Completions	3.57
Documentation and Support (36)	Manual and Instructions	3.34

Two software packages with at least ten evaluations received overall ratings above 4.40. These were Music Ace™ (4.52) and Auralia™ (4.41).

Conclusion

There are a number of factors to be considered when evaluating instructional software for use in music education. These include the type of material presented; the instructional approach used; the hardware and memory requirements for the software; how well it matches the course and student needs, including objectives and learning styles; its transparency and ease of use; and the levels of branching, record keeping, and support available. The form developed by the author for such evaluations has been used to good effect by practicing music educators as a tool for direct comparison of software packages.

List of Packages Evaluated:

- Adventures in Music Land
- Alfred's Essentials of Music Theory
- Aural Skills Trainer
- Auralia
- Band in a Box
- Challenge Musicus
- Clef Notes
- Dolphin Don's Music School
- Early Keyboard Skills
- eMedia Bass Method
- eMedia Guitar Methods
- Finale
- Functional Harmony
- Keyboard Kapers
- Keyboard Tutor
- KIDS
- Master Music Manager
- Metronome
- MiBAC Jazz Improvisation
- MiBAC Lessons
- Midisaurus
- Music Ace (1 & 2)
- Music Flash Cards
- Music Lab Series
- Music Maid
- Music Office
- Music Terminology
- Musition
- Note Detective
- Note Speller

- NotePad
- Practica Musica
- Sibelius
- Sibelius Compass & Instruments
- Smack a Note
- Smart Score Pro
- Super Musicus
- Tap It
- Time Sketch Editor
- www.musictheory.net

Free Music Technologies for use in the Music Classroom

Paul Redding, Larimore ND Public Schools

This presentation introduced music educators to a few free resources available on the internet for use in the music classroom. These resources are especially useful because they are not specifically tailored to a particular unit of study, but rather can be applied freely to several different units of study.

Participants received a CD of demo software and complete versions of some free software and Website links. Demonstrations of the programs were presented, as well as examples of student work products [Editor's note. Contact the author for detailed information].

From Crutch to Creative Tool: Using Computer Notation to Expand Musical Ability in the Classroom

Peter Kirn, Hunter College, City University of New York

The author discussed how notation software can be integrated into an instructional environment for beginning students, by developing their ability to understand the relationship between music, notational convention using technology as a tool for notation in an analytical and creative fashion.

The author, a composer and published expert in notation software, has been teaching teachers to use music software to provide them with hands-on explorations of how computer notation can be used in music pedagogy. Some of the potential dangers computer notation can pose to creative, analytical understandings of music (when notation software becomes a crutch and reinforces shortcomings in musical thought and technique) were discussed. Some of these challenges have their root in the development of notation: Computer notation software is an abstract model of an abstract model of music.

In order to move beyond these obstacles, Sibelius was used as an example of how a class can be taught using music notation software. We focused in particular on the way in which the software abstracts the process of notating and how to make this readily understandable and intuitive to those who are newcomers to music notation, thus making this session ideal for those who have not yet used modern software extensively or have not had the experience of teaching it. Finally, armed with this basic knowledge, the author demonstrated how the computer can become a creative learning tool for music in general, via composition, by

1. building compositional scenarios around a student's primary instrument (helping a clarinetist, for example, write a short etude for clarinet and piano),
2. using software as a tool for understanding the technicalities of instruments and orchestration,
3. making software a "what-if" laboratory to ease students into composition (while avoiding the computer-as-crutch phenomenon by encouraging performance away from the computer),
4. creating interactive worksheets for instruction,
5. creating feature sets specific to a lab environment, and
6. integrating music notation software with other MIDI/audio record ing computer music software (which students are increasingly likely to use on their own).

An overview of how music notation software can integrate into a laboratory environment with either self-created instructional tools or a number of available off-the-shelf instructional materials was presented.

Several principles are important in using composition software:

1. Move beyond the screen: Learn notation by understanding the relationship between freehand, pen and paper notation and automatic onscreen notation.
2. Move beyond the headphones: Use notation software as a creative "what-if" tool that augments and expands musical ability, by encouraging deeper listening and musical thought and work away from the computer, rather than notation as a crutch.
3. Lab practicality: Focus on how computer notation works in real world pedagogical situations, not just sales demonstrations, with concrete demonstrations of some of the possibilities for classroom applications.

From IMac to Eband: The Evolution of Music Technology at Omaha North High School

Margaret Pavlik and Therese Laux, Omaha North High School

Omaha North High School is the math, science and technology magnet school of the Omaha Public Schools. This magnet was developed out of a desegregation plan designed to draw students from the entire district. A creative and dedicated staff has worked for 18 years to attract students and to provide a top-notch education for all students who select the school. All curriculum areas sought ways to integrate the use of technology into the instruction. Securing a "21st Century Community Learning Center" grant from the United States Department of Education provided North High School with the financial resources for the development of a music technology lab, as well as an array of other social and educational services for the students and community.

The High School has had a successful music technology program for the past three years. This program started with a dream and one apple computer. Now the program encompasses a full music and media technology lab *and* an eband (electronic [instrument] band).

This multimedia presentation described how a large, urban high school infused technology into the instrumental music program by developing a music and media technology lab, using electronic instruments in traditional ensembles and developing an eband.

The presenters provided an informational packet for participants. This packet included a description of Omaha North High School's Music Technology lab with a list of hardware and software used, a description of the Omaha North High School eband with an accompanying list of equipment, a resource list of vendors and industry contacts, a variety of sample lesson plans for music technology at the secondary level, a plan for addressing national standards through an eband, and a list of related sites.

The following outline summarizes the presentation topics.

1. An overview of technology in music education
   - Technology in our world: Technology as a resource and tool
   - Students and technology: Active learning
   - What music technology can do for your students
2. The implementation of music technology in the instrumental music program
   - Music and Media Technology lab: planning the equipment, instructional issues
   - Use of electronic equipment in traditional ensembles
   - Eband ensemble: type of equipment and instructional issues
3. Computer Systems and Lab Management
   - Physical setup: space, furniture, and wiring
   - Suggested hardware and software

4. Lab management and security
5. Teacher Strategies and Student Activities
   - National Standards
   - Music Technology competencies
6. Resources for Educators
7. Technology Institute for Music Educators (TI:ME)
   - Organizations
   - Websites
8. Showcase of Student Work and Activities

Imagining the Future of Electronic Music

Peter Hamlin, St. Olaf College

The technology that supports electronic music is changing rapidly, and with those changes, artists are rethinking what it means to be a composer or performer. Peter Hamlin looked at some path-breaking examples of recent electronic music composition and performance and used these recent works to peer into the likely future of the medium.

Some of the areas discussed included: MIDI controllers beyond keyboards (the instruments actually used to make music with electronic sound), Software synthesis and what it means for school electronic music facilities, new possibilities for interactivity using computers and the internet, technology for creating multimedia art, and developments in voice synthesis and what they will mean to composers.

In Search of the Lost Chord. Exploring the Sound of Historical Musical Scales with "Acid" Software

Preston Bush, Valley City State University, North Dakota

With the "Acid" software from Sonic Foundry, we are not limited to the usual tempered division of the octave into 12 intervals, as heard on the piano. We can hear the harmonies and melodies of a Chinese scale from before the 3rd century B.C., the various "modes" such as Aeolian, Phrygian, Dorian, etc. of the just scale of Ptolemy, the 17-tone Arabic scale, and scales of our own design. We can hear the 4:5:6:7 ratio of frequencies of the Barbershop Quartet dominant seventh chord and the "neutral third"–intermediate between major and minor thirds–of jazz. The Acid software allows us to specify intervals to the nearest tenth of a cent, where 100 cents is the interval of a semitone on the piano. Students would enjoy hearing and playing with these scales using the relatively inexpensive "Acid" software.

Kids and Computers: An Overview of Elementary Music Software

Brad Lambrecht, Valley City State University

This presentation provides an overview of the current available music software available for children at the elementary grade levels. The presentation was organized according to the National Standards of the Arts. A short demonstration of various software and strategies for using these resources was shared.

For example, one of the least utilized standards of composition and improvisation is especially accessible through the computer. Programs such as Rock, Rap, and Roll or Acid Pro can provide students with pre-made options for composition as well as opportunities for them to record their own performance.

Synthesis and Integration: World and Electroacoustic Music in the Applied Studio

Robert Murray, University of Northern Colorado
Lauren Murray, University of NOrthern Colorado
John Steffa, Murray State University

In the fall of 2001, Dr. John Steffa, Dr. Robert Murray, and Dr. Lauren Murray were all serving on the music faculty of Murray State University in Murray, Kentucky. The Murrays perform in a duo called "Harmonie del Sur" and were interested in developing new music for the combination of oboe and trumpet. That year, there was a call from the International Trumpet Guild for compositions for trumpet and MIDI. Knowing he wrote in this medium, Robert Murray approached John Steffa about writing the duo a new piece for the conference. John agreed, and while the composition was never submitted to ITG, an outstanding work for oboe/English horn, trumpet/flugelhorn, and MIDI entitled *Songs in Tribute* was the result. *Songs in Tribute* became not only a piece for the duo to perform, but a model for a new piece, *Fantasy for Trumpets*, and an outstanding pedagogical tool.

Songs in Tribute was inspired by sights and sounds recorded by John Steffa while traveling throughout the world. The accompaniment for the piece is on compact disc and uses 3 sound sources: natural sounds, sampled sounds, and purely electronic sounds. The primary source is natural sound from outdoor festivals, concerts, or tribal gatherings recorded in Africa, The United States, Peru, and Brazil on video tape. Samples of these sounds were fed into a computer, and then were manipulated. In some cases, only a very small amount of the sample was used in order to create pitches for rhythm, in others entire measures of the samples were used and incorporated into the accompaniment. Movement one (*Children's Song*) uses re-

cordings of Tanzanian women singing songs in Swahili to their children. The soloist's lines mimic the rhythm and timbre of the singers on the recording. The third movement (*Ritual*) is for electronics alone, using the deafening sounds of congas from a Brazilian Candomblé service. This movement is used by the composer for contrast–and to give the performers a chance to change instruments. Movement two (*Festival*) and movement four (*Dance*) uses sounds and motives from a Peruvian festival for the Winter solstice. There was a large gathering of village "bands" playing outside on a stage under some Aztec ruins in Cusco, Peru. The composer used a video camera to record some of the performances, and then selected his samples from the recordings he had. The fourth movement maintains the folk melody almost in its entirety.

In addition to the recorded sounds from outdoors, a two octave sound sample was recorded of Lauren and Robert playing oboe, English horn, trumpet, and flugelhorn; creating the ability for the performer's sounds to be played on the accompaniment while playing the solos live. The final sound source was from an already existing "sound bank" on the composer's computer. All of the motives in the entire work are derived from the recordings of the natural sounds. On the accompaniment CD, the composer has created an accompaniment that at times sounds like a gamelan—this is not a live recording, but a created accompaniment using the sounds from the existing sound sources.

Songs in Tribute was eventually premiered at the Kentucky Music Teachers Association Composer's Concert in spring of 2001 and performed again for the trumpet and oboe studios at Murray State University in Kentucky. The piece was greeted with some enthusiasm and curiosity by all of the students; as this was rural southwestern Kentucky, the performance was a new experience for many of the students. With a desire to continue to seek out opportunities for these students to grow both musically and in their worldview, the logical progression, based on Harmonie del Sur's collaboration with John Steffa, was to ask him if he would be interested in composing a piece for the Murray State University trumpet ensemble. After consultation with regard to the level of musical proficiency in the trumpet studio, John suggested extracting the last movement of *Songs in Tribute* and basing a new work for trumpet ensemble on those materials.

Upon completing the work, John provided a MIDI recording of the piece, which he titled *Fantasy for Trumpets*. This was played for the studio in the fall of 2002, and the listeners exhibited enthusiasm and curiosity about performing with electronic and world music incorporated in the work. In initial rehearsals of the *Fantasy for Trumpets*, the electronics were not employed. This was done to give the studio ample rehearsal time to experience the piece on their own, utilizing sense of time, rhythmic skills, and ensemble intonation. After adding the electronics, the student's awareness was heightened in terms of their attention to the aforementioned details. In particular, it became apparent that they would have to now synthesize their trumpet skills with a new voice: that of electronics. For a majority of the

students, this was a significant challenge. From the standpoint of the applied teacher, it was an excellent opportunity to encourage and reinforce what are necessary skills in mastery of a musical instrument. With the culmination of four rehearsals, the Murray State University trumpet ensemble presented the premier of *Fantasy for Trumpets* in Louisville, Kentucky at the Kentucky Music Teacher's Association Composer's Concert on October 27, 2002.

At the conclusion of the performance, a questionnaire was given to the trumpet studio regarding their experience with *Songs in Tribute* and *Fantasy for Trumpets*. They were asked to respond to eight questions:

1. State your observations upon hearing *Songs in Tribute* for the first time.
2. What effect, if any, did *Songs in Tribute* have on your understand ing of world music?
3. What effect, if any, did *Songs in Tribute* have on your understand ing of Electroacoustic music?
4. How did *Songs in Tribute* contribute to your understanding of *Fantasy for Trumpets*?
5. State your observations on hearing, rehearsing, and performing *Fantasy for Trumpets* for the first time.
6. What effect, if any, did *Fantasy for Trumpets* have on your under standing of world music?
7. What effect, if any, did *Fantasy for Trumpets* have on your under standing of Electro-acoustic music?
8. State any other observations you have regarding *Songs in Tribute* and/or *Fantasy for Trumpets.*

The questionnaire showed a remarkable change in opinion and understanding from hearing and then performing a piece that utilized world music and electro acoustic music. It was clear that the pieces were not too difficult for the students to understand and enjoy, and that many concepts were taught during the rehearsal and performance of *Fantasy* for Trumpets.

The *Songs in Tribute* project has not yet ended. In the fall of 2004, Robert and Lauren Murray will both be teaching at the University of Northern Colorado, and will perform *Songs in Tribute* for the oboe and trumpet studios. The trumpet studio will then perform *Fantasy for Trumpets* at the College of Performing and Visual Arts Gala, and then will be asked to fill out the same questionnaire. Eventually, the findings can be combined with the original questionnaire and compared. Some questions that may be answered are: does geographical location affect exposure, understanding, and enjoyment of electronic and world music? Do students in rural areas have the skills necessary to learn and enjoy this kind of music? Does living in a more cosmopolitan area change your views and understanding of these kinds of music?

Ultimately, the intention of this study is to generate future work. With further exploration of this topic, a comprehensive paper that can be published as a whole or as articles in journals is the first goal in support of this project. Using this paper and information as a guide, other applied faculty can commission future teaching pieces for performance for all instruments in applied studio instruction. It is the hope that this study will inspire others to seek out new music to perform with their applied studios, and find new ways to teach "old" western concepts. In the future Harmonie del Sur would like to travel with the pieces, polling students in different areas of the country and watching for changes in the attitudes and understanding of world and electronic music.

MusicXML: Why Do We Need One More Computer Format for Music?

Gilbert Kuipers, Valley City State University

It is reasonable to doubt the need for yet another computer format since we already have MIDI, MP3, and a host of other file formats already in use. But these are not sufficient for (a) preserving music, (b) translating your files from one program to another program, and (c) complex manipulations by sophisticated users.

Unfortunately there are many complex problems in the integration of computers, music, music notation, and multimedia. The MIDI format is older than many of today's college students. Although it is still a very useful interchange format, it is not sufficient for notation, analysis, or a number of other modern computer applications. MP3 is based on sampling and the related technologies are patented. Various music software programs have their own native proprietary formats or publish the music in a graphical format without musical semantics. You cannot open the file unless you have the correct version of the software. The odds are that even if you are able to read those special files fifty years from now, you won't have the software to do anything with them.

But there is a solution. MusicXML is an application of the Extensible Markup Language (XML). There is no need to give a complete history, but its roots goes back to the 1960s and a need to easily convert technical manuals from one computer format to another whenever the hardware or software changed. This lineage continued on to HTML and the World Wide Web. XML has been rapidly emerging as a universal data standard for almost everything. One amazing part of the development of XML was that although Microsoft, IBM, Sun, Netscape, Xerox, Hewlett-Packard, Adobe and other major computer companies disagreed about a lot of things, they all considered XML to be an extremely important key strategy for the 21st century.

XML is a simple text based format. This means that you can open and edit XML files in any standard word processing program. You can edit

MusicXML files in Mircrosoft Word or Corel's WordPerfect. Even if Apple, Microsoft, IBM, Sibelius, Finale, and General Motors all go out of business, you will probably be able to edit your MusicXML files. MusicXML is suitable for data archiving. This is the reason why Project Gutenberg, the Internet's oldest producer of free electronic books, has approved MusicXML as the only nonproprietary text based format approved for music submissions.

Any reasonably competent computer programmer can manipulate the complex structured data tagged in an XML file. So even if the software program that created your XML file becomes obsolete or is discontinued, you still will be able to convert your files into another format.

Since XML data are self described tagged text data, MusicXML data can be analyzed easily; for example, to determine the percentage of Bach's pieces that have quarter note durations or the number of C major chords in a symphony. It should also be possible to integrate MusicXML with other XML technologies, such as SVG, SMIL, and someone's future development of a nonwestern XML music DTD or schema.

It is not surprising that there have been many attempts to use XML (and the earlier non XML SGML) technologies for multimedia and for music. Anyone can create a new XML schema or DTD. The difficulties are limiting the problem, developing a practical solution platform, implementing this solution in various applications, and having it selected by users who are often not very computer literate. If we limit the problem to an interchange format for notation, analysis, retrieval, and performance applications, that is, a practical format for use by real musicians, MusicXML is currently the only XML language which has emerged as a practical format for use by real musicians. MusicXML attempts to provide an interchange language that is well designed from musical, human, and computer perspectives. It does not solve all problems, but augments other specialized proprietary music formats available today.

Pro Audio for the Nontraditional Music Student

Paul Redding, Larimore North Dakota Public Schools

Perhaps your school is like mine–there are many students in school who are not in the band program, but would love to know more about music. Through music technology, we have the potential to reach students who otherwise would not participate in school music education programs, and help those who are classified as "at risk" students.

Through the study of professional audio technology, students may not only gain experience in working with the equipment, they also may engage in the creative process of music creation by nontraditional means. Problem solving and real world applications are a key characteristic of this study,

thus adequately meeting current requirements for standards based education.

In the class students will go through three basic areas of study: professional audio equipment and recording, computer aided compositional skills, and music business via www.musicinhighplaces.com.

This presentation was designed to give music educators an overview of this as well as some first steps into acquiring and working with Pro Audio equipment.

Progress and Promise in K-12 Music Education: Is Technology Working?

Jack A. Taylor,
Florida State University (retired)
and the University of North Carolina—Greensboro
(Visiting Professor)
Sara Hagen, Valley City State University
Cynthia R. Peterson, Valley City High School
Kimberly C. Walls, Auburn University

[Editor's note. This panel presentation is incorporated into the article in this issue of the JTML titled **"SPECIAL REPORT ON THE STATUS OF TECHNOLOGY IN MUSIC EDUCATION"**].

SmartMusic Workshop

Leigh Kallestad, Make Music!

This Presentation Included the Following Topics

SmartMusic Studio (interactive accompaniment software) for Winds, Voice and Strings

Students learn solo repertoire more efficiently when they practice with interactive accompaniment at school or home. SmartMusic's 20,000 accompaniments now include string repertoire, beginning band and beginning string methods. Also included are 50,000 skill building exercises in all keys, CD quality recording, tuner, metronome and much more. Create your own SmartMusic accompaniments with Finale 2004.

Meaningful Assessment for Beginning Band Students

See how your beginning band students will progress as they play along with fun accompaniments, all with fully adjustable tempos. SmartMusic's new

assessment shows students what they played incorrectly, and how to correct it. A score is generated which can be emailed to the teacher. Recording/ playback capability also included.

The Finale Family: Solutions for the Music Educator
See how easily you can set up a score and enter notes and lyrics. Topics include: creating tests, lessons and worksheets, scanning, creating assessable exercises/excerpts, auto-harmonizing and much more.

SmartMusic Contest Solutions
Students learn solo repertoire more efficiently when they practice with interactive accompaniments at school or home.

Implementation of Music Composition and Arranging through the Virtual High School

Ivan Stefanov, Virtual High School, Boston University

This presentation described the implementation of an online music composition and arranging class through the Virtual High School (VHS). The presentation addressed various aspects of the class development including teacher/ student communication and the use of music notation software. In addition, the author presented the findings of a pilot study about the learning experiences and attitudes of students studying music composition and arranging in an on-line environment. The demonstration used samples of students' compositions as well as sample models of communication between teacher and students.

About Music Composition and Arranging

This class was designed to provide students with a good understanding and a working knowledge of the process of creating their own compositions. An essential part of the course is learning how to use the available digital technology such as computers, music writing, and sequencing software, and MIDI.

The class is divided into two segments. The first section of the class introduces the students to the music notation software, the online environment in general and gives students the opportunity to get to know each other. During the first segment, the students will experiment for the first time with their compositions, receive feedback from one another and the teacher. This section will also ask the students to use some specific notation techniques such as percussion notation, text, dynamics, articulation, and tempo.

During the second section, students work on their final project. They have the freedom to envision and bring to completion a composition, which is recorded and posted on the Internet.

Overview of VHS

VHS is an international consortium of high schools that offer network based courses taught by consortium teachers for students in participating schools. Each school contributes at least one teacher who teaches a VHS course online, typically in place of teaching a section of a regular course at his/her traditional school. In the VHS model, the school also provides a site coordinator who handles administrative matters and supervises local students enrolled in VHS courses. Each school in the consortium can enroll 20-25 students in these netcourses for each section of a teacher's time (i.e., one netcourse) that it contributes to the pool. The quality of the course offerings is controlled, in part, by requiring each VHS teacher to successfully complete a graduate level netcourse (called the *Teachers Learning Conference*) on the design and development of network based courses.

Every course consists of four main rooms that are accessible to both students and teachers. *Schedule* is where the entire syllabus and all assignments from the teacher are arranged in weekly threads. *Media Center* is where all media documents are located, *Course Room* is where all assignments and discussions take place, and finally, the *Profiles* thread holds all of the participants' profiles. Additionally, the *Portfolio thread* serves as a place where students can receive their grades and other comments from the teacher regarding their academic progress in the course. In addition to the four rooms, VHS faculty members can access the online *Assessment*, which allows access to grade students' performance. The teachers at the VHS are required to create a *Private Thread* for each student in their class, which allows a student to communicate with the teacher in a private manner.

Challenges of VHS Technology

Since the *LearningSpace* Course Room supports asynchronous rather than synchronous communication between the students and the teacher all discussions have to be done in writing. Another concern for VHS technology is that *LearningSpace* has limited support for simultaneously viewing and discussing materials. For example, students can post and see digital materials in the *LearningSpace* Media Center, but discussions occur in the Course Room, and students cannot be in both areas of the class at the same time. Consequently, students cannot look at and talk about multimedia materials simultaneously.

Findings and Implications of the Pilot Study

Two important trends in student perceptions toward the online Music Composition and Arranging course were found in this pilot study. The first trend shows that students feel the negative impact of the lack of personal, real-time contact between the teacher, the other students, and themselves. Students overwhelmingly feel that the traditional music classroom experience offers an advantage to virtual learning with respect to personal contact, especially between the students and the teacher. Krista P.'s response

was typical when she wrote, "It's not so personal when it is a VHS course considering you can't see face to face." Justin H. adds that "Communication with the teacher has been horrible."

In contrast, the second trend in student perceptions of VHS indicates that most students feel the online environment offers them the opportunity for more feedback from both the teacher and the students on their musical compositions. Many students indicated that they feel more relaxed to offer opinions without being intimidated by peer pressure. Dan A. expressed the thoughts of many other students when he wrote, "When I am face to face in school, I think people are afraid to criticize others. People also have more opportunities to give feedback on VHS." Laura C. wrote that when a student submits a piece of music to be critiqued by strangers "you don't have to worry about rejection as much."

Since all class postings, including composition files as well as teacher/student communications–except for private thread messages–are public, students feel there is more openness and sense of community. The great amount of feedback and the togetherness, which has formed among the students and the teacher, were expressed many times throughout the survey. Dan D writes, "We are allowed to go through each other's work and summarize the person's personality by what they've created."

The results of this study strongly indicated that perhaps in its current format the course spends too much time on learning the technology. Since most students already come to the class computer proficient it will be feasible to shorten the time in which they are learning how to operate the software and navigate through the site of the course, because apparently these skills come rather easily to the students. These study findings suggest that the Music Composition and Arranging course may benefit from allowing students to compose their first complete composition much earlier in the course.

Conclusion

Online music education has great potential in today's technologically advanced society.

As research continues to demonstrate the educational benefits of student participation in online music courses, the discussion becomes more about the quality of online education and less about the technology it utilizes. Thus, the medium in online music education is no longer the end result. The medium instead allows students and teachers to broaden their educational horizons by engaging in courses which otherwise be not part of their school's curriculum.

Technology in the Rural Music Classroom: Look What We Can Do!

Kris Kieztman, Edgeley North Dakota Public Schools

Technology allows my students to explore their music opportunities at greater levels–in everyday classes and in ways that encourage higher level learning and accomplishments.

The following questions with answers were addressed, and some student-created examples were shown.

1. How can technology help with the teaching of music theory concepts?
   - In Kindergarten, the students have learned from "The Nutcracker" software from MENC.
   - Grades 1-2 students "play" while learning new concepts from Music Ace I.
   - Grades 3-4 students enjoy Music Ace II as they explore music theory.
   - Grades 5-8 general music students expand their theory knowledge through the creation of music with Finale Notepad. They benefit from "hearing" their work in addition to "seeing" it.
   - High School students *can* use various music software to im prove their skills, including Finale and Overture.
2. What ways have I had students use technology to help them with music composition?
   - Grades 1-2 use Music Ace I.
   - Grades 3-4 experiment with MIDI keyboards–using the music lab to play and save music they have created.
   - Grades 5-6 enjoyed "Grooveblender.com" which provided a nontraditional way for these students to try out compositions or "creating music."
   - Grade 7-12 students use Finale 2004 and Acid Pro, which allow my advanced and gifted students to compose at levels they may not have otherwise been able to achieve.
3. How have I used computer recording in my classroom?
   - Students actually "hear" themselves.
   - Students listen and critique themselves.
   - Students have a copy of their own music performances.
4. How do I use MIDI files to enhance a student's learning?
   - MIDI files assist HS chorus students in learning All-State audition selections.
   - Students can rehearse parts without a regular accompanist.
   - Students can work in sectionals in chorus classes–either with accompaniments or to learn parts.
   - Instrumentalists can practice with accompaniments.

5. How does the use of technology provide *more* to our student's education?
   - Students can experiment with electronic music
   - Students can create professional looking scores of their own music compositions.
   - Students can create sound effects for various events (plays, etc.).
   - Students can make quality presentations in class about music and musicians.
   - Students can experiment with video and sound editing.

In conclusion, technology has so much to offer; how did we ever do so much without it? So many students, so much talent, and only one rural school music teacher! ACDA, MENC, and many other educational music organizations encourage technology through educational lesson plans and electronic music contests. I can accomplish more with my students thanks to TI:ME Technology Institute for Music Education). Now, I have more time!

The ALIVE Project

Allan Molnar,
The Percussion Studio, New York City and Toronto,
and Stewart Smith, University of Manitoba

Just Imagine . . . where would you go if you could take your students on a field trip anywhere? If you could invite anyone to teach a lesson to your class, who would you ask? Imagine the ability to connect your students with students from other schools in distant cities and countries using real-time video and audio. Accessible Live Internet Video Education (ALIVE) is now a reality. Video conferencing initiatives have been explored in some school districts but most of these projects have been cost prohibitive to all but a few schools. This reality, however, has just changed dramatically. None of the schools that is directly involved in the ALIVE project had ever invested in dedicated video conferencing equipment. Careful planning and the full deployment of existing resources allowed each of these schools to "get up-and-running" for approximately $250.

Four teachers in four cities decided to share resources by way of the ALIVE project. Allan Molnar in New York City is working as an independent consultant and is a music education instructor in the music education department at Brooklyn College. Stewart Smith brings his middle school students to the ALIVE project from Winnipeg, Manitoba. Dave Staples joins the ALIVE project with his secondary school in Halifax, Nova Scotia, and Julie Bunucci brings her elementary school students from Tuckerton, New Jersey. The model is very simple: teachers working together to enrich the

learning experience for their students. Allan is working with a group of music education students this semester (Spring 2004) at Brooklyn college and is using video conferencing to do the following:

1. Observe student teachers as they teach onsite at schools in Brooklyn and Staten Island. These observations are conducted from Allan's music studio in Manhattan.
2. Introduce a wide range of guest speakers to the in-class seminars held at Brooklyn College. Invited guests include music profession als from Winnipeg, Vancouver, Calgary, Saskatoon, Hong Kong, Toronto, Montreal, Chicago, Los Angeles and the American Midwest. Topics include: concert band, choral music, jazz improvisation, big band drumming, multimedia, independent music publishing, MIDI technology, GarageBand, iLife, etc. All sessions are live and interactive.
3. In-class practicum: The Brooklyn College student teachers are be ing given the opportunity to observe and teach classes in the ALIVE project schools. Allan, Stewart, Julie and Dave work together to facilitate this process.

Students Mentoring Teachers

Virginia Schmidt, Valley City State University, North Dakota

I am a Music Business Major at Valley City State University. Because of my experience in high school, college, and the United States Army, I was basically forced to keep up with technology or fall by the wayside. At times this was stressful, but as I continued to embrace technology I began to love it. The more opportunities I have to increase my technology skills, the more at home I feel.

Having spoken with several teachers from different levels of education and different school districts, I have learned that students can be helpful in mentoring their teachers in the use of technology. Below are some responses that were received from the teachers.

Kris is a music teacher in a rural North Dakota town. Kris was preparing a presentation and having difficulty coordinating the music with her PowerPoint presentation, and asked a student at VCSU for assistance. The student was willing to assist Kris and went through the steps necessary to coordinate the music and the presentation including downloading iTunes from the Internet, importing the music into her computer, converting the music to wave, and finally imbedding the music into the PowerPoint presentation.

Linda is a music teacher in a rural North Dakota town. Linda indicated that she has no problem asking for student assistance when it comes to technology. She stated that her older students set up the sound system for

performances, assist with the setup and running of the CD burners as well as burning CDs.

Bill, adjunct professor, had a piece of music he needed transposed and asked a technology student for assistance with Finale. The student demonstrated some of the functions and capabilities of the Finale software and suggested Bill continue working on his own. Bill was able to select the functions he would be implementing in order to attain the desired end result. By encouraging Bill to work at his own pace, using the applications available with Finale enabled him to become more familiar with the software than if he had sat and watched someone else do it. When Bill had questions on a particular function he wanted to use, and the student directed him to the video tutorial built into the Finale software. Upon completion, Bill had learned a great deal about Finale and gained self confidence that he would be able to complete projects using Finale in the future.

Adjunct Professor John was enrolled in a music technology class, but was experiencing some difficulty as he was admittedly a bit apprehensive about computers and technology. Because of the diversity of students and instructors taking the class, some students felt competent in areas covered in the class. John sat by a student who had more experience with technology and was able to receive assistance and answers to his questions even when the teacher was busy with other students. This worked very well and by the end of the semester John was checking his e-mail on his own, a task he was not comfortable with previously.

Dr. Sigurd Johnson, Director of Percussion and Band and Assistant Professor of Music, has been teaching at VCSU for four years. When Johnson began teaching at VCSU, his knowledge of technology was limited to basic word processing and e-mail. When asked how students have helped him with technology, he responded, "You name it . . . ." Dr. Johnson indicated he had received assistance from students to learn how to post pictures, select and apply a homepage, utilize blackboard (course management software), and use digital recording equipment to record concerts and recitals. There are a number of areas Dr. Johnson would still like to know more about and he said he will not hesitate to ask students for assistance. When asked about technology, he said,

> It seems the learning of technology is daunting – it takes too much time and energy. I've gotten better since I've learned some of the newer application and techniques. Using technology has made several areas of teaching easier but I have also found that some things seem to be more difficult. Life will be much more comfortable once I become more familiar and am able to adapt my teaching style to the technology I need to use.

Mrs. Beth Klingenstein, Assistant Professor of Music and Director of the Valley City State University School of the Arts, has been a member of the faculty for 11 years. When asked about her knowledge of technology prior to coming to VCSU, Mrs. Klingenstien responded by stating that at

first she didn't even know how to type and was too embarrassed to ask anyone for help. She added that the more she learned, the less embarrassed she was to ask for help. Now she is not embarrassed to ask for help at all, and gratefully accepts assistance from students. Mrs. Klingstein said that she takes a technology or computer class every year in an attempt to keep up with growing technology advances. Regarding her feelings about technology, Mrs. Klingenstein stated,

> At first I really disliked technology. I felt there was too much emphasis put on technology at VCSU, especially too much emphasis on technology in music. I like using it better now that I know it. I actually had a student recently tell me that **I** put too much emphasis on technology in my classes–what a switch!
>
> I use computers and technology a lot in my classes. In Piano Pedagogy class I have my students put together PowerPoint presentations, create documents such as letterheads, business cards, brochures, and a variety of other documents that could be used in a private studio. In addition, I teach a Senior Portfolio class where the students learn to create a Portfolio. There are some cool uses for technology.

Valley City State University is one of only two schools in the North Dakota university system to incorporate extensive use of technology into classes. When Mrs. Klingenstein began using technology she felt there were no discipline specific uses for technology and there was little time spent teaching faculty how to use available technological resources efficiently in the classroom. Since then, Mrs. Klingenstein has explained how she incorporates technology into the classroom to instructors from University of North Dakota and Concordia, and these instructors are in awe with what can be accomplished in the classroom with these instructional technologies.

There is some ongoing frustration for Mrs. Klingenstein because she feels she can never learn everything–there is always something new to learn and changes every year. "It's hard for me to learn new things; I don't have a natural sense to experiment. I need someone to show me and new things are hard for me to learn. There is also not enough time in my busy schedule to keep learning the new programs."

Leesa Levy, Director of Choral Activities and Instructor of Voice, has been an instructor at Valley City State University for five years. Her comments included,

> I don't mind asking students for help in technology. Everybody knows I don't know much about computers and technology, so I'm not embarrassed at all if I need to ask. I have been asking for help with increasing frequency. I don't have the type of mind that can figure these things out so I ask for help. Our University is quite a way ahead of most other universities in North

> Dakota. The instructors at VCSU seem to know more about technology than instructors at other institutions, especially those who are my age.

Mrs. Levy voiced some of the same concerns and frustrations as other instructors, including the fact that constant changes and developments in technology take place on a regular basis. She stated,

> It doesn't matter if I'm up to date; in two years the system will be different. I don't worry about what I don't know because I'll learn the new applications when they come out. I will learn the system as I need to use it. Sometimes I'll wait until I need a particular program or format and by then I end up learning the newest updates rather than the old one.
>
> As far as VCSU and technology is concerned, I think we're on the right track. When I talk with other graduate students at NDSU, I tell what technology we have access to and are using. They're floored because they and their students don't have access to the type of technology our students have. Computer technology for music educators may be drawing students into the curriculum. Since about 1930 classical music has had an elitist stigma attached to it by the general public. Using digital technology is a great way to get kids to be creative and draw them into making music a more integral part of their lives. If they don't have years of experience playing an instrument, there's no real way to be part of the music world. Digital music removes the barrier between ordinary people who want to make music a part of their life and those naturally talented musicians.

The continuous metamorphosis of technology into the classroom has been interesting to watch as teachers have relied upon and asked students for help. Often it appears that individuals who are apprehensive and afraid to incorporate technology into the classroom simply have not had much exposure to the technologies, or are unsure of themselves and capabilities. What can teachers learn about observing students teach and assisting these teachers with technology issues? One professor stated matter-of-factly, "It takes the pressure off me; I don't have to worry about knowing everything." The role of mentor has traditionally been the teacher mentoring the student, but as students are introduced to technology at an earlier age the tide may be turning a bit. When asked about students filling a type of leadership role in the school, Linda said that the older students with technology savvy help the younger students.

Using Streaming Video for Music Teacher Training

Kimberly C. Walls, William Powell, Martina Miranda, and Rick Good, Auburn University

The M.Ed. in Music Education degree at Auburn University is available through distance learning. The distance learning music education graduate program at Auburn University is a faculty team project. Certainly, a MME candidate with vision is required to initiate the distance learning program, but there also must be a number of faculty willing to go through all the stress of learning to teach in a new way. In this presentation, Auburn University faculty shared their experiences with distance learning. During the presentation the live video stream of a course in session was displayed and the presenter logged into the chat room. The attendees viewed Dr. Good discussing band composers with on-campus students and interacting with the distance students through the chat room. Then Dr. Miranda, Dr. Good, and Dr. Powell, who were in the Auburn classroom, presented through live streaming video their experiences of teaching in the distance program.

Longer school calendars and the University's location in a rural area seemed to be limiting enrollment in the graduate program, so internal funding was acquired to institute a distance learning program. Courses have been offered for three summers. The same course work is required in the distance program and the on-campus program. All courses are hybrid courses. For example, in Summer 2004, Curriculum and Teaching in Music Education included five students in the classroom and 10 students who were in various locations.

Some courses in traditional music graduate programs present challenges to distance education. If we are to preserve the quality of music graduate education, then transactional distance should be reduced, that is, distant learners need to feel that they are really part of the "learning ensemble." A primary goal of our program is retention, therefore students should feel as though they are part of the class. Rogers' (2002) profile of the adult student suggests that adult students are continually learning, have an established pattern of learning, have competing interests and bring experiences, values, expectations, and intentions to their education. Tennant and Pogson (2002) adapted Rodgers portrait by placing it in the context of an interactive model in which the learners interact with each other, the teacher, and the material. In this model, both the learners and teacher interact with the larger context of the social and psychological environment. Instructors conducting the learning "ensemble" need to encourage high levels of interaction with and among students as well as the course content.

The students in our program have a vast array of experiences, thus instructors encourage them to use the discussion board so students can benefit from each other's teaching knowledge and experiences. Since there are students from different states, students can learn what music education is like in various parts of the nation, from West Virginia to South Carolina, to

Georgia to Alabama, and even Louisiana. Having students from across the country participating and interacting with each other has improved the quality of the program.

A unique aspect of our program is the use of live streaming video. During lecture and discussion with students in the classroom, the students who are at home can tune in and watch class. While watching, distant students have their chat room window open to ask and answer questions by typing. The video is archived on a server so those who cannot "attend" class may watch the class later. Students who watch after class post their reactions to the WebCT discussion. A graduate teaching assistant operates and monitors the video stream and the chat room. Distance students indicate any difficulties with the audio to the assistant. The assistant can switch the video cameras to show the instructor, the on-campus students, or the classroom computer display.

There is a short delay inherent in the streaming video delivery format, so instructors must remember to give students time to hear the question and type in their responses. Students who are on campus must also be patient with the time delay and waiting for their distant peers to respond. Although the delay sometimes results in a chat comment that repeats what a student has already said, in other cases a delayed response may summarize a discussion point better than the oral discussion had done. It is difficult for the instructor to attend to oral questions and typed questions at the same moment. A distant student's focus of attention may be diverted from the live stream when they start typing a chat message. Small group discussions take place by having on-campus students use laptops to log in to chat rooms along with distant students.

Sharing handouts and communication among students and the instructor is facilitated through WebCT. All course material, communication, and email is organized in WebCT and only students and faculty may view the materials and resources posted. Dr. Rick Good, Associate Director of Bands, teaches graduate level Wind Band Literature, uses the WebCT program. Available through the Wind Band Literature WebCT site, included are the course syllabus, a calendar, URLs for archived streaming video, audio files for listening assignments and timed online quizzes. The computer grades the quizzes and then grades are displayed immediately. The instructor can change any of the points assigned if there's a mistake in the quiz. There is also a bulletin board area named *discussions* in which students can type responses to assignments in the discussions area and read and respond to what other students have posted. In this manner, students get to know each other and feel as if they are part of the class even though they are not physically present. The class lectures page has a link to the archived video for each class as well as a link to the live broadcast.

Students come to campus for some of their courses. In Dr. Martina Miranda's Introduction to Orff-Schulwerk course, students came to Auburn for a clinic. In Dr. William Powell's Advanced Choral Conducting course and in Dr. Good's Advanced Instrumental Conducting course, students attended a two-

day conducting ensemble. There also was an orientation day at the beginning of the summer. Attendance helped students to feel much more like a part of the group and to feel more as if they knew what would be required. The orientation was videotaped and archived so those who did not attend could view the sessions. Students in the Introduction to Orff-Schulwerk participated in hands-on teaching in a summer community experience. Some of the students came to Auburn to participate, but others choose to develop their own camp in their local setting.

In addition to exams and papers, a variety of submission formats are used for projects. Oral reports, conducting assignments, and teaching demonstrations may be sent on videotape. The tapes are played in class and streamed to the distant students. Students send in arrangements as Finale or PDF files. Each conducting student submits a tape of a rehearsal or concert at the beginning of conducting class. By playing each of the tapes for the class, students were able to point out common mistakes. They later conducted the class ensemble at the on-campus seminar. The videotape of the seminar was then viewed so that the class could assess their improvement.

Additional information about the program is available from the Auburn University Music Education site.

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Why Create Web Pages?

William Wieland, Northern State University

Why create Web pages? Even humble music educators have something to share with the world–or at least your pep band parents. Examples include your concert schedule, recital programs, studio policies, teaching philosophy and student accomplishments.

Students are facile Web surfers and learn quickly online. My students are accustomed to my Web pages and practically demand them from me. Young people are also eager to contribute to your site or create their own.

The Internet is "free" in the minds of students. My class piano students are very enthusiastic about my no-textbook option. It is often possible to use a Web site rather than purchase more software.

Links offer efficient organization of information. Web pages can be organized linearly like paper pages in a book. Endnotes or references are usually easier to access through links rather than paging through printed materials. Web pages can also be organized hierarchically like a table of contents, all at the click of a mouse.

Links to your own pages are usually not broken. I have found my links and server to be more reliable than outside links. The Internet is both democratic and anarchic. Anyone can publish, including you. The World Wide Web truly has made the world smaller. I have met people nationally and internationally through my pages and their Websites. We may one day use less paper and thereby use our brains more than our notebooks. We can also reduce office clutter and waste less time photocopying paper. In the meantime, we can print Web pages!

The Internet is an immense, user-friendly resource. With remarkable ease, anyone–including music educators–can create their own world in cyberspace. Anyone anywhere can access this world any time.

The starting point is to create text and links. Word processors such as Word or WordPerfect and spreadsheet programs such as Excel or Quattro Pro can create html files. Of course, html editors like FrontPage, Netscape Composer and Dreamweaver are designed to create html documents. You might begin by creating pages of links to sites frequented by you or your students. Your tidy and annotated "online bookmarks" are more useful than a stranger's large list. To better harness the potential of the Internet, place your own content online. The Web is an excellent location for documents which are subject to change, e.g., class schedules and music calendars. Important procedures and policies are also welcome on the Internet. Students want to know how grades are determined. Parents want to know your studio policies and all costs associated with lessons. Educational materials find a good home on the Internet. I am gradually creating online books with links to my own Web pages and outside sites. Web pages also can be projected as lecture slides or printed as handouts. When you have mastered text and links, add images. In addition to free Internet sites, you or your students can be creative with MS Paint which is also free. Images of music can be created with notation software such as Finale or Sibelius and edited with Photo Editor. You can also scan and download images to your site to enhance its visual impact.

Next, add sound files. MIDI files are small, download quickly and have good piano and percussion sounds, but usually poor vocal, string and wind instrument sounds. Notation programs can create MIDI files while sequencers such as Cakewalk and Cubase are designed to create MIDI documents. Possible Internet uses include "music minus one" accompaniments and online dictations. Real Audio and mp3 files are larger than MIDI files, but capable of capturing any timbre. Recording equipment and software is required. Of course, a number of online sites offer free sound files.

To create more advanced Web pages, learn HTML code. Begin by using templates and "borrowing" code. Next, learn to create your own code with

the help of a number of online resources. You can always peruse the code of the Web page you are viewing. With Netscape, click on the View menu and Page Source or type Ctrl + U. With Internet Explorer, click on the View menu and Source.

To create dynamic and interactive Web pages, add JavaScript to your html documents. Begin by inserting free code that is available online into your html files. Next, create your own code. Once again, online assistance abounds. If you are very ambitious, explore Java and Flash.

For additional information, go to www.northern.edu/wieland and click on Why create Web pages?

SEVENTH ANNUAL NATIONAL SYMPOSIUM ON MUSIC INSTRUCTION TECHNOLOGY (2005)

Lessons Taught and Lessons Learned: What My Students Have Taught Me about Teaching Music in a Technology Lab

Alex Ruthman,
Cranbook Schools and Oakland University

For the past two years, I have been trying to find ways to engage meaningfully my middle school students in creating original music mediated by technology. I have tried many things; a few of them have failed, yet many projects exceeded both my and my students' expectations. This presentation shares some of our successful composing experiences, the tools that helped make them work, and insights into what contributed toward musically engaging and educationally appropriate projects.

Lessons Taught

Three approaches to structuring composing experiences will be shared and discussed. Starting with open-ended exploratory composing experiences, I will share how we used two loop-based creative music programs for the PC: Super Duper Music Looper and Acid Music Studio 5.0. Using these tools during introductory class experiences provided a useful window into students' prior musical understanding, illuminating ways we as teachers may better connect to our students' prior musical experience to design appropriate follow-up composition projects. Throughout this presentation I will share and discuss examples of student work, including how unique aspects of the technologies enabled assessment of musical growth and understanding.