Albert, Jeffrey (Loyola University, New Orleans, LA)
How a Software Agnostic Found Religion: or Why I Decided to Use a Required DAW in my Music Tech Classes

Choice of software is an integral part of course design in any music technology course. For much of my teaching career I had taken a software agnostic approach, focusing on the theory behind the practice, and telling students that the programs all did roughly the same thing, but the knobs may be in different places. I would give examples in class on varying digital audio workstations, and let the students use whatever software they preferred. In the fall of 2015, I changed this approach, and started requiring all of my students to use the same software for class assignments. I have seen a number of advantages to this approach, and met with less resistance than I anticipated. This presentation outlines the factors that influenced my choice of software, the advantages gained by becoming software specific, and a couple of pitfalls encountered in the transition.

Bain, Reginald (University of South Carolina, Columbia, SC)
Scripting Web Apps for Music Theory using SVG & Web Audio API

Scalable Vector Graphics (SVG) and Web Audio API are two powerful web-browser technologies that may be used to create interactive web apps for music theory. This paper discusses a JavaScript web app for geometrical music theory that employs SVG and Web Audio API. The app generates an interactive 12-tone equal tempered pitch-class clockface diagram, a traditional model for pitch-class space in post-tonal theory, that uses SVG to display all possible polygon diagrams and Web Audio API to play a given polygon's associated chord and rhythmic timeline.

Bowman, Judith (Duquesne, Pittsburg, PA)
The Music Professor Online—Making the Transition

When music programs go online, the issue of total staffing arises. In the case of a graduate level music program, professors who are comfortable with digital environments and with teaching online may teach courses in the major. However, professors teaching "supportive music courses" may not experience the same comfort levels. This situation highlights the need for faculty preparation for online teaching, and with issues highly specific to music instruction, it's likely that knowledgeable music faculty colleagues will provide the training. This presentation describes a faculty orientation for a graduate music education program that includes online courses in the "supportive music courses" category. The program is built upon a theory-based "big-picture" foundation (TPACK framework) that includes interactions among course content, pedagogy, and technology. Specific steps include rethinking course content and pedagogy, composing the course, choreographing learning experiences, and planning how to conduct the course when it "goes live."

Broman, Per (Bowling Green Statue University, Bowling Green OH)
It's a Kid's Game: Using Scratch as a Learning Tool for Music Theory and Aural Skills

Massachusetts Institute of Technology's Media Lab's programming software Scratch was initially intended to increase children's interest in coding. The syntax using graphic blocks is intuitive and easy, and the built-in sound utilizes general midi, as well as sound files. This paper will outline the possibilities and limitations of using Scratch as a training tool in undergraduate aural skills and music theory, developed in my classes during the last three years. I have used Scratch both for student-driven composition exercises (creating compositions and testing ideas in the atonal segments of Theory IV), and instructor designed apps for dictation and sing-back exercises in Aural Skills III. The lack of musical notation stimulates an algorithmic mode of thinking—a novel concept for most music students—and turns musical tasks in Scratch into learning experiences for logical thinking.

Edstrom, Brent (Whitworth University, Spokane, WA)
Arduino for Musicians

Arduino microcontrollers are one of the most useful and popular open-source hardware tools available to modern-day electronic musicians. Arduino (and related microcontrollers) can be used to create an astounding array of custom MIDI controllers, synthesizers, and effects processors that respond to light, air pressure, touch, sound, or any number of real-time performance gestures. Arduino for Musicians, which is geared at musicians and music technologists with little or no programming experience, will provide an overview of the tools and processes that can open the door to an expanded palette of creative resources for modern-day music making. Although the session will focus on the use of Arduino and related technologies in live electronic performance, the Arduino platform would be an excellent choice as a foundational technology for courses in MIDI, real-time electronic performance, algorithmic composition, or innovative interdisciplinary courses involving music, computer science, and electrical engineering.

Greher, Gena (UMass Lowell, Lowell, MA)
See Testa, Mike (Defining Musicianship for the 21st Century Music Teacher)

Greher, Gena (UMass Lowell, Lowell, MA)
The MaKey MaKey Invention Lab as a School-Based Enrichment Block

As a music teacher educator my goal is to help my students embrace technology in their own teaching. The goal of this project is to provide music education students with hands-on experiences planning lessons, and learning to deal with classroom issues in real time, while also embedding music within a STEM environment for middle school students. The Principal of one of our local partnership school's developed a middle school enrichment block to provide remediation classes for at-risk students as well as additional music classes to support student interests. Among the many musical offerings is the MaKey MaKey Invention Lab. This session will focus on a brief live demo of the MaKeY MaKey device, examples of student creations, as well as reflections from the college students facilitating these classes.

Hall, Richard (Texas State University, San Marcos, TX)
Texas State Mysterium for New Music Ensemble

The many-colored musical poesy performed by this electro-acoustic ensemble pays homage not only to celebrated contemporary composers, but also to the new and often experimental works handed in by students and faculty from universities throughout the country. Public concerts embrace a wide variety of styles and media including dance improvisations and live electro-acoustic pieces utilizing real-time digital sound processing with laptop computers and video projections. These performances have taken place at musical and improvisational conferences and festivals, art museums and universities throughout the country and Europe."

Halper, Mathew (Kean University, Union, NJ)
See Manzo, V.J. (Guitar Amplifier Modeling: Hardware vs. Software Technologies)

Hein, Ethan (New York University, New York, NY)
Designing Experiences for Music Learning and Creativity

The Groove Pizza and the aQWERTYon are new online software tools for novice-level music learning and expression. The workshop gives a hands-on introduction to these tools, explains the design process and methodology behind them, and explores their curricular possibilities, in the music classroom and beyond.

Herman, Gabe (The Hartt School, The University of Hartford, Hartford, CT)
Teaching Analog Signal Flow in an Interactive, Virtual Environment

The ability for a student to successfully operate an analog mix console is a baseline skill; however, teaching these systems in an academic studio environment poses many difficult challenges including access to physical resources and teaching methods that facilitate interactive exploration of technical material. The objective of this research is to develop a virtual software simulation of the logic system and user interface of an analog console that provides students a way to learn and practice signal flow operations outside of the classroom.

Hutchins, Jeffery Kyle (University of Northern Iowa, Cedar Falls, IA)
See Surman, Patrica (Immediacy of Nowness: Works for Flute, Saxophone and Computers by Living Composers)

Kersten, Fred (Boston University, Boston, MA)
The "New" Multimedia File Formats: Fresh Wine in Innovative Bottles!

This presentation will provide an update on new multimedia file formats and illustrate reasons for creation and conversion. Examination of HOW and when to utilize these formats for better technology application to music will be made.

Kidde, Geoffrey (Manhattanville College, Purchase, NY)
Listening and Learning with Algorithmically Generated Music

For my presentation I will demonstrate how computer-based algorithmic music might be used in music learning. Using a Max patcher (which I call "Music Box") to generate algorithmic music, and including controls for basing the music (chord and scale fragments) on various scales, and for changing various aspects of probability and timing, one can imagine various learning outcomes in aural recognition, comprehension, and improvisation. These activities lead to some interesting questions about music creation.

Krämer, Reiner (McGill University, Montreal, QC)
See Surman, Patrica (Immediacy of Nowness: Works for Flute, Saxophone and Computers by Living Composers)

Link, Alison (University of Minnesota, Minneapolis, MN)
See Lipscomb, Scott (BubbleMachine (v. 3.0): Converting an interactive, real-time musical analysis tool from Flash to HTML5)

Lipscomb, Scott (University of Cincinnati, Cincinnati, OH)
BubbleMachine (v. 3.0): Converting an interactive, real-time musical analysis tool from Flash to HTML5

BubbleMachine is an interactive multimedia tool that allows the creation of "bubble charts," providing a visual analog for musical form. Once created, users can easily navigate from one section of a piece to another by simply pointing-and-clicking at the appropriate location in the graph, providing an interactive pocket guide for musical compositions. Due to Apple's decision not to support Flash playback for iOS devices, the program was ported from Flash to HTML5, a format that remains widely compatible across browsers and operating systems. Though advanced programmers and experienced Flash and HTML5 developers will benefit from seeing the results, this demonstration will also be highly beneficial to a general audience and novice technologists who would be users – rather than developers – of such technologies.

Manzo, V.J. (Worcester Polytechnic Institute, Worcester, MA)
Guitar Amplifier Modeling: Hardware vs. Software Technologies

Guitar is one of the most popular instruments in the world, and the evolution of both hardware- and software-based amplifier modeling has yielded a broad gamut of options for compositional, performance, and educational

applications. This lecture will provide an overview of the current state of guitar amplifier modeling with a focus on Fractal Audio's Axe-FX (hardware), and Positive Grid's Bias (software).

The targeted technology survey will include the design of specific implementations for classroom learning, live performance, and composition. And a side-by-side comparison of the rival technologies will be undertaken with an eye towards recommendations for best practices in various domains."

McConville, Brendan (University of Tennessee, Knoxville, TN)
What is Online? A 2016 Update: Comparing Survey Results on Online Music Courses.

This presentation will provide a three-year update to a survey presented at the 2013 ATMI National Convention (Boston). We will report on the results of a new survey regarding online music courses in higher education. The session will juxtapose data from the 2013 and 2016 surveys to identify trends in online music teaching and learning. After studying the data and reflecting on the presenters' experiences in building an online music course, the session will conclude by suggesting best practices – per area and course level – for those considering the move to online music courses.

Menoche, Charles (Central Connecticut State University, New Britain, CT)
New Music Notations: 3D Printing Solutions to Get "In Touch" With The (Musical) Tablet

Gesture-based performance applications are increasingly common on tablet devices but present new challenges for contemporary performers, composers, and improvisers. Starting an iPad ensemble in fall 2014, this presenter discovered that the performers found it difficult to read a traditional score while sight-reading, rehearsing, and even performing when using applications that required continuous visual monitoring and interaction. It was essential to find new ways to write and read scores. The solution was to create physical three dimensional notation systems that can be "read" by touch rather than by eye. These 3D scores allow the performer to "read" the score with one hand while keeping the eyes free to focus on the other hand's interactions with the visual interface. Through research and experimentation, this presenter has begun to develop new touch notation systems that use polymer clay models, 3D design software applications, and, increasingly affordable and common, 3D printers.

Mitchell, Rachel (University at Albany – SUNY, Albany, NY)
Core Theory Reboot: Harnessing Automatic Tonal Analysis Technology in the Music Theory Classroom

This demonstration introduces Harmonia, an NSF-funded, cross-platform (Mac, PC) software application that can automatically assess musical notation and parse tonal music into chord structures and analyze the voice leading and harmonic functions of tonal music. It can determine key areas and modulations, interval sizes and qualities, analyze and label diatonic and chromatic harmonies and non-harmonic tones, and find voice-leading errors such as parallel fifths and octaves, voice crossing, doubled leading tones, and more. Scholars can use this technology to search our music literature and teachers can use this technology to replace or augment paper-based teaching materials such as textbooks and workbooks with interactive, multimedia teaching environments that assess and evaluate with instantaneous automatic grading and feedback. This demonstration will show how the software works, and will offer teachers a quick primer for creating their own exercises in Harmonia for students.

Murphy, Barbara (University of Tennessee, Knoxville, TN)
See McConville, Brendan (What is Online? A 2016 Update: Comparing Survey Results on Online Music Courses)

Pike, Pamela D. (Louisiana State University, Baton Rouge, LA)
The Efficacy of an Online Piano Tutorial: A Comparison of Student Achievement Using an Online App with and Without Teacher Mediation

With the increased availability of online teaching technology to assist music students in learning and drilling various concepts, teachers have begun to embrace tools that might motivate and enhance the musical experiences for their students. This paper explores a piano app that has become an increasingly

popular tool, both as a supplement to and in lieu of traditional lessons. Data on student scores, achievement, various instructional modes, and playtime were compared (through two intermediate levels of a method book) between two groups of students (N=200); those using the app as the only form of piano instruction; and, those using the app in addition to weekly piano tutelage. While both groups improved while using the online tutorial, there was significant difference between the two groups. Potential benefits and drawbacks of using similar technology will be explored.

Post, Brian (Humboldt State University, Arcata, CA)
Film Scoring with Omnisphere

Omnisphere is a high powered sampling and synthesis modeling plug-in soft synthesis system that works well with any current sequencing application. It has also become an industry standard for film scoring particularly in the area of television production. The application provides over 7,000 pre-set sounds and allows for the user to design sounds as well. This presentation will first give an overview of how Omnisphere works then will continue by showing how to use Omnisphere with Logic Pro X to quickly create a complex score for a one-minute film clip.

Powell, Bryan (Amp Up NYC, New York ,NY)
Multiple Definitions of "Music Technology": Teacher Perspectives from the Integration of Technology in Popular Music-Based Programs

While the presence of popular music performance ensembles in K-12 contexts is rapidly increasing, the presence of music technology in these ensembles is often conspicuous absent. While the absence of music technology in classrooms is well documented, (Dammers, 2012), the role of music technology in school-based popular music ensembles is a field worthy of more exploration.

In 2015, Little Kids Rock, the United States' leading non profit for training public school teachers to run popular music based music education classes, set out to recreate the Music Technology section of their teacher manual. As part of this process, current K-12 music teachers were contacted to gain a better understanding of their views and needs regarding music technology. This presentation will examine the teachers' experiences, including both the challenges and successes of integrating music technology into their popular music performance ensembles.

Richmond, Floyd (University of Valley Forge, Phoenixville, PA)
Building a Web-Based Notation Program in One Hour

This session will demonstrate the techniques for building a browser-based notation program entirely during the session. Every line of code will be written during the session. The function of the program will be basic, but it would be appropriate for those building web-based music tutorials and interactive web applications. Topics will include notation symbols, sound, and saving results. Technologies used will include Javascript 5 and XML.

Riley, Raymond (Alma College, Alma, MI)
Raising the Bar with Interactive Video: Increasing Engagement and Accountability

This presentation takes a journey into the world of interactive video with a special emphasis on methods for embedding time-based activities such as links, chapters, polls and quizzes in video primarily designed for blended and flipped learning environments. We will look at a variety of tools such as YouTube's annotation and card feature (beta), web-based applications found at EduCanon, EdPuzzle and Hapyak, and more full featured commercial offerings including Adobe Captivate and Articulate Storyline, just to name a few.

Sink, Damon (Western Carolina University, Cullowhee, NC)
Live with Live: Ableton Push as an instrument for composition

The Push controller from Ableton integrates seamlessly with their non-linear sequencing software, Live. The combination is a powerful tool for musical composition and sound design, encouraging improvisatory creativity, synth programming and sound tweaking and formal organizational flexibility superior to linear notation and sequencing software. Live: It's not just for DJs slinging loops! The "serious" composer will find that many of the complex techniques for manipulating audio in the computer-music realm of the 1990's are readily available as plugins in the DAW environment. Granular and filter delays, complex panning algorithms, random tone generators: Everything old is new again, especially with the extensions possible in the Max for Live add on included with Ableton Live Suite. The presentation will also include excerpts from the presenter's own compositional works as well as live demonstrations and a new, 5 minute piece for trumpet and Ableton Live.

Surman, Patrica (Metropolitan State University of Denver, Denver, CO)
Immediacy of Nowness: Works for Flute, Saxophone and Computers by Living Composers

Compositions take on qualities determined by forces that though selected by the composer, are inherent to the device itself, such as genre, media, instrumentation, or formal aspects. For example, we speak of compositions as being innately "pianistic" or "orchestral." Many of these choices are determined by the Immediacy of Nowness in that technological development has a far-reaching role in creation. This program explores the inherent qualities that are observed within given computer programming environments. In this sense, software itself displays bias in the artistic thought process of the composer (and performer.) The concert juxtaposes pieces composed within different programming environments, by using the following electronic chamber music combinations: (1) fixed media + instruments; (2) reactive media + instruments; and (3) improvisation for laptop + acoustic instruments. Programming environments included in the concert are: SuperCollider, Max, or Max for Live, Pd, OpenMusic, PWGL, Logic, and ProTools. It is the performer's hope that the audience will enjoy the sonification of the Immediacy of Nowness."

Testa, Mike (Salem State University, Salem, MA)
Defining Musicianship for the 21st Century Music Teacher

The challenge for music teacher educators in the United States who are preparing future music teachers to educate a diversity of students beyond the gifted and talented few who identify with the culture of ensembles, is to enlighten their students to the role music technology can play as a viable route to accomplish these goals. As a music professor and music teacher educator, our goals are to help our students embrace technology as both a useful tool and as a valid musical medium and instrument. This paper will explore these issues along with some policy revisions that could support rather than hinder a new teacher's attempts to provide a music education aligned with the goals of developing 21st Century Skills.

Watts, Dustin (Georgia Institute of Technology, Atlanta, GA)
Guided Practice with Feedback using Mobile Devices

Music students are prone to playing music too fast and disregarding fundamentals of tuning, rhythm, and tone simply for lack of developed awareness. This builds bad habits that are corrected periodically with feedback from a teacher if they are able to afford such private attention. This presentation will detail the research, development, and field testing of a mobile app based on the Suzuki method and used to guide the practice time of a music student in the time between interactions with a teacher. The presentation will outline how the app effectively serves as a tighter feedback loop for students and the benefits realized by both students and teachers from using such tools in music education.

Whitehead, Glen (University of Colorado, Colorado Springs, CO)

Environmental Transformations: New Inroads to Immersive Curriculum in an Expanding Musical World

This presentation will demonstrate new pedagogical practices that connect music creation, field recording and applied music training. I will explain how these methodologies can apply directly to new approaches in the transformation of music curriculum. These environmental applied activities can be integrated into a variety of pedagogical structures such as ear training, music theory, composition, improvisation and music technology.

Williams, David (University of South Florida, Tampa, FL)

The iPad in Live Performance

This session will showcase possibilities for the use of iPads in live performance. The band will perform a variety of music including covers of popular songs and original music written specifically for the capabilities of digital instruments. In addition, members of the band will overview the group's typical rehearsal and performance practices, and outline how the band serves as a curricular and pedagogical model for students.