

AMERICAN MUSIC REVIEW

The H. Wiley Hitchcock Institute for Studies in American Music

Conservatory of Music, Brooklyn College of the City University of New York

Volume XLIX, Issue 1

Fall 2019

Sonic Arts For All! Reaching New Students Through Music Technology

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"At Sonic Arts For All!, I get to be me."

- DJ Storm, age 11

I founded Sonic Arts For All (SAFA!) in late 2015 in response to what I observed to be an alarming trend happening today in music education. With the undeniably crucial role technology plays in today's continuously evolving music industry, why is it that students only formally study this technology in higher education settings and not elementary and middle school? Why are K-12 students left to fend for themselves when it comes to accessing the necessary tools to pursue this artistic field? Of the meager 20% of New York City public schools with music programs, astonishingly fewer than 5% of those schools have implemented any technology components to their curricula. After completing my Bachelor's degree in music composition and technology, I made it my mission to make music technology more accessible. Providing a support system for the next generation of artists is where the root of the Sonic Arts For All mission lies: to make music technology accessible to diverse K-12 student demographics. Click [here](#) to watch a SAFA! student DJ Rock.



Accessible Technology

SAFA! courses and workshops are an alternative and/or supplement to traditional K-12 and special needs music education. Immediacy and autonomy are important for growing and sustaining passion. Unlike more traditional music classrooms, our mission is to provide students a space for learning concepts through a hands-on technological approach. Rather than learning to read music before learning to make music, music technology allows students to interact directly with sounds on day one. Therefore, at the heart of the SAFA! program are open-ended projects where students develop a portfolio of their own compositions. In completing these projects, students are allowed to follow whatever thread they find most exciting, whether it be a pulsing beat or an otherworldly soundscape.

We create studios that act as sound laboratories, providing structured guidance while allowing students opportunities to explore the full range of sonic possibilities afforded by electronic and digital technologies. Not only do we believe in providing access to music technology, but we also consult our students and their families in utilizing accessible consumer technology for the purpose of engaging in digital music making. For this reason, the iPad has become the bread and butter of the SAFA! Learning tools.

Many K-12 students use iPads or other tablets and smartphones for a variety of recreational activities online. This includes watching videos on YouTube, gaming, or maintaining a social media presence. Without even realizing it, many families already own the necessary tools to create digital music. A nearly endless selection of introductory to advanced music production applications for iOS and Droid platforms exists, many of which are free or cost less than five dollars. The SAFA! Workshop Model uses touch screen technology because of this affordability and availability. Touch screens also eliminate the intimidation factor that comes with approaching

Sonic Arts For All! (cont.)

new musical instruments and interfaces for the first time. While the concepts can be new, the device is quite familiar.

Through this familiarity, students are able to walk away from their first workshop experience with a new perspective on a device they have, up to that point, only used for recreation. We witness this lightbulb turn on, time and time again, when a student realizes they already possess the necessary tools to make music outside the classroom. In many ways, the SAFA! teaching model facilitates this Do-It-Yourself mentality in students. It's about fostering a classroom environment that inspires students to tap into musical capabilities they otherwise may not have even realized they possessed. [Click here](#) to listen to DJ Thunder's "Happy Cockroach."

Fundamentals Meet Technology

The primary goal at SAFA! is to preserve, respect, and support local music traditions by allowing each of our sites to take our centralized curriculum and adopt it to the history and needs of their specific community. This way we not only enable new students to create music, but also foster stylistic diversity and honor local musical heritages. Too often educators lose the interests of their students by not providing a classroom repertoire that speaks to them.

Through popular music genres, music technology education has the ability to engage new student demographics in curricula dedicated to more traditional or fundamental music concepts, including:

- rhythm and tempo in relation to popular genres (determining BPM for a hip-hop beat vs. a famous film score)
- pitch and scale qualities in relation to a popular song (Is _____ in a major or minor key? How can you tell?)
- melody vs. harmony through synthesizers (utilizing pads and other polyphonic synth patches to create harmony, while using monophonic synth patches for arpeggiated basslines and lead melodies)

In the case of teaching music fundamentals through technology, SAFA! has found success using Garageband for iOS as a primary teaching tool. Throughout 2018 and 2019 we had the pleasure of serving as resident educators at the Apple Stores in Williamsburg, Brooklyn and SoHo, Manhattan. There, we crafted weekly lesson plans dedicated to navigating fundamental music concepts through the Garageband digital audio workstation (DAW) for iOS. Group discussions at the beginning of each workshop allowed us to connect the weekly fundamental topics to the musical interests of our students. Two particular features of this software that proved effective in covering more of these traditional music topics were the Smart Keyboard and the Beat Sequencer.

iOS Garageband: Smart Keyboard

The Smart Keyboard allows for the user to perform and record on pre-made chord pads, each automatically tuned to the key of the project. As opposed to a traditional keyboard, the Smart Keyboard allows for instant chord and scale performability without any keyboard training whatsoever. This has proved to be quite useful when working with young beginners, many of whom have never before taken a music class. Through the Smart Keyboard, chord changes and compositional structure are made simple and intuitive for experimentation and performance, allowing for compositional ideas to be recorded on the spot.

The Smart Keyboard has a built-in arpeggiator that allows for any harmonic materials to be broken into melodic patterns. This has proved to be an effective tool when explaining the difference between harmony and melody to young beginners. The arpeggiator has the ability to run at a variety of rhythmic note values, anywhere from whole notes to dotted 64th notes. This has prompted our students to experiment in creating melodic, harmonic, and rhythmic patterns as well. Some of the past topics covered while utilizing the Smart Keyboard have included:

Sonic Arts For All! (cont.)

- instrumental arrangement (using chord functions for pad synthesizers and piano, using arpeggiator for a bassline)
- polyrhythms (assigning separate rhythmic note values to individual arpeggiator instruments, such as a 16th note bassline over a melody in triplets)
- chord structure (using Smart Keyboard as a guide to composing chord structures, as seen below)



iOS Garageband Smart Keyboard

Click here to listen to DJ Shanza's "Sequencers And Arpeggiators."

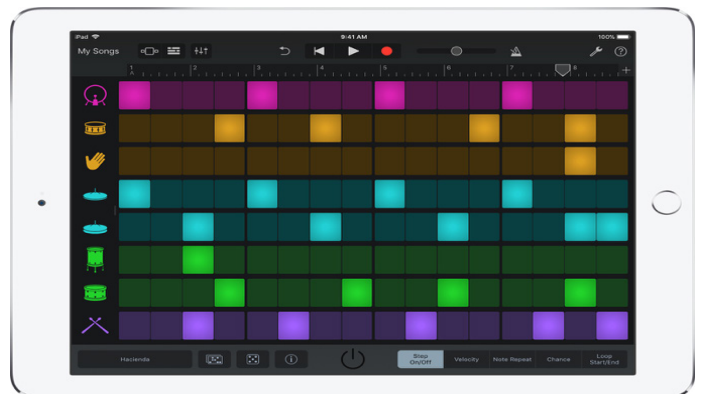
iOS Garageband: Beat Sequencer

The Beat Sequencer is a sixteen-step programmable drum machine that serves as an alternative drum interface to the standard "finger drum" pads that Garageband has used since its first iOS edition. The function of a sequencer allows for musical data to be manually programmed ahead of time or on the fly while the sound is automatically generated. The utilization of generative instruments over performative instruments has negated much of the typical anxiety of live performance for many SAFA! students.

Through automated sound generation, students translate their musical ideas into electronic gestures without needing to worry about specific cues or changes one would typically find in more performative instruments. This is also due to the fact that most generative electronic instruments are quantized, meaning musical input is limited to predetermined rhythmic and tonal values. Not only does this result in more sympathetic rhythms and pitches, but it allows for students to compose and produce works through custom presets determined ahead of time.

Similar to other step sequencers, the rhythmic note values are illustrated through sixteen steps in a linear grid. For students with little to no experience in music notation, this linear grid provides a unique image that teaches rhythmic note values in a visual way that, in essence, is another form of music notation. Some topics that have been taught through step sequencers include:

- time signatures (16 steps divided into 4 sections = 4/4)
- polyrhythms (assigning separate sequence lengths to each track of the sequencer, such as 16 over 12 over 10, etc.)
- rhythmic arrangement (how does a hip-hop drum pattern sound vs. a techno drum pattern?)



iOS Garageband Beat Sequencer

These unique tools in Garageband have allowed our students to carefully write their compositional ideas into musical realities. This streamlined approach to music making provides new windows into music fundamentals and composition. It acts as a confidence-booster for all of our beginning students, many of whom have been excluded from the typical music classroom entirely. Click here to listen to DJ Ami's "Robot Funk."

Sonic Arts For All! (cont.)

Addressing Disability Education Through Technology

Before founding Sonic Arts For All in 2015, I had worked as a music technology consultant for AHRC New York, a citywide social services group dedicated to providing opportunities for New Yorkers of all ages with both intellectual and physical disabilities. Each site was allotted ten iPads to be used by clients for recreational activities, many of which already had Garageband installed on them. This was the first time I was able to witness the impact of touchscreen technology on inclusive music classrooms.

While many of my students were unable to play traditional instruments due to limitations in motor skills, automated technology such as generative instrumentation and quantization of musical input has allowed these artists to digitally express musical gestures. For many, this was the first time they were able to physically create music. Something as small as a light tapping gesture on an iPad could result in endless musical ideas. The ease of navigating this technology created autonomy and empowerment.

When SAFA! was founded, part of our mission was to continue this practice of providing inclusive music learning environments for special needs students, in both the private and after school setting. Since 2016, I have had the pleasure of working privately with DJ Noah. He is a thirteen-year-old student, born and raised in Brooklyn, who loves pizza and video games, and also has autism. Though Noah is quite musically adept and had some prior keyboard training, he would often find piano performance frustrating and physically triggering. His parents reached out to SAFA! to find a way to nurture his love of music making in a more sympathetic, sensory-friendly environment. Like most kids his age, Noah is well versed in iPad technology, which made for an easy transition to making music on his own personal device with some guidance. DJ Noah has excelled at utilizing the Korg Kaossilator family of instruments, a touch-based synthesizer and drum machine that is performed solely by dragging one's finger across or tapping an LED-lit X/Y grid. Unlike most synthesizers and drum machines, the Kaossilator has no faders, pads, buttons, or keys.

The physical relationship between gesture and musical result is strengthened through its immediacy. When Noah holds down the grid, a drum beat of his choosing begins to loop. When he drags his finger to the right, the more complex the beat becomes. When he taps the grid and immediately lets go, he hears a long slapback delay tail on a single drum hit. When he performs a monophonic synthesizer, Noah sets the scale of the instrument ahead of time, sliding his finger across the X-axis to hear each individual note in the scale. Through its quantized loop function, the Kaossilator is able to save sequences in a consonant, rhythmic grid, allowing for on-the-spot composition through live performance.

This intuitive instrument design has meshed well with Noah's abilities and its flexibility has allowed us to customize curriculum designs for other students with motor disabilities. It allows for complex music to be made immediately regardless of the level of motor skills in a student. Since the Kaossilator's creation, other iOS softwares such as Garageband and Animoog have added X/Y graphic touchscreen features, allowing more accessible interactivity for special needs populations. [Click here to listen to DJ Noah's "Friday Jam."](#)

Moving Forward

Our goal as sonic arts educators is to continue our research into accessible digital music interfaces through partnerships with like minded music technology developers and manufacturers. In the past year alone, SAFA! has partnered with Korg and Apple, as well as start-up developers such as Artiphon and Auxy, to forge new curricula centered around creating an inviting music making environment. Music technology is now intuitive enough to engage students of any learning style, allowing the individual to design music at a pace that suits them.

By focusing our workshops on learning by doing, we've seen a tremendous growth in retention and interests among our students. Music technology empowers young people to work independently, build self-confidence, and explore musical ideas they've never before executed. The Sonic Arts For All! staff facilitates this self-empowerment among the populations we serve. We seek to sustain a musical interest even among our youngest students that will lead them on the path towards higher education and a position in the professional workforce.