Using Smart Phones for Music Education
Dr. John Kuzmich, Jr.

Have you ever had a teaching moment where you were lucky enough to have just the right tool to create magic? Matthew Etherington, a middle school teacher in Chapel Hill, North Carolina, did, and that tool just happened to be his iPhone. One of his guitarists had a question about an odd-sounding C6/9 chord. He states, "We looked up the voicing on Guitar Toolkit and I was able to both show him the voicing and strum the electronic strings to hear the sound of the chord - quite amazing."

Smart phone technology is making magic with a plethora of music applications or "apps." Reva Paget, a private studio violin instructor in Wisconsin, regularly uses the multi-track recording, strobe tuner, and metronome applications on her iPhone. She loves having a tuner right at her fingertips. Peterson Electronics, a leader in the tuner industry, is making an iPhone version of its popular StroboSoft tuning program. iStroboSoft uses the classic Peterson strobe display to provide 1/10th cent accuracy. The glowing sharp and flat indicators simplify tuning when it is difficult to determine which direction the strobe is moving, making it easy for musicians who don't normally like strobe tuners. It also includes a noise filter, which reduces the effect of extraneous environmental noise; this is helpful when using an external mic or a clip-on tuning device.

A metronome is a "must have" teaching tool and it is especially handy if you can carry it around on your smart phone. Frozen Ape Tempo is an excellent smart phone metronome. The simple, single-screen interface makes it perfect for drummers to use live. It features 17 different time signatures and is adjustable from 20 to 220 BPM. The tap tempo allows you to tap along with the music to capture the tempo.

Smart phone technology is popular among professional musicians like guitar legend, Al Di Meola, who uses his iPhone to create music compositions. He says, "I never dreamed that an amazing user friendly system for recording sound on sound could ever exist on a phone. Four Track (multi-track recording app) represents a major leap forward for the traveling musician-composer! I did most of my writing on this app this past year! I love it!"

Smart Phone - What is it?

Technology innovations seem to be coming at us at a dizzying pace. Our students can't get enough of the latest and greatest technology, and there is a reason everyone is clamoring for the highly portable, all-in-one devices.
When you think of a cell phone do you think of making phone calls or texting? Are you aware of the instructional offerings the latest cell phones provide? A smart phone is a mobile phone that offers advanced capabilities, often with PC-like functionality (PC-mobile handset convergence). There is no industry standard definition of a smart phone. For some, a smart phone is a phone that runs a complete operating system with software providing a standardized interface and platform for application developers. For others, a smart phone is simply a phone with features considered advanced at the time of its release - for example, in the early 2000s this included e-mail and Internet, but these are now common on non-smart phones, too. Other definitions might include features such as e-book reader capabilities, WiFi, and/or a built-in full keyboard or external USB keyboard and VGA connectors.

Today, a smart phone is generally considered to be a miniature computer that has phone capability, and with many applications ("apps") to enhance your teaching. A smart phone can include as standard features Internet access, text messaging, e-mail access, integrated digital camera, high quality audio recording and playback, location finder, and more.

Choosing a Smart Phone

After choosing a phone carrier, you'll need to consider what type of smart phone you want. Here are some things to consider:

• **User Interface** The most important thing about a smart phone is its user interface, or the software utilized to interact with the device. The intuitiveness of menus will often determine whether a given phone is worth owning.
• **Specs** Processor and memory. Most smart phone buyers don't pay attention to what kind of processor a given device has, but a good CPU can mean the difference between a silky smooth experience and a frustratingly slow one.

• **Display** The right size, resolution, and touch features. If you prefer a smart phone optimized for messaging, test drive one that places the keyboard directly beneath the screen. Screen resolution matters just as much as size. Multitouch touchscreens allow you to use pinching gestures for zooming in on maps, photos, and Web pages.

• **Keyboard** This should allow for fast and accurate typing. Entering text on a device should be easy; choosing a smart phone with a good keyboard is paramount.

• **Web Browsing** Get the best surfing experience. All smart phones can handle full HTML Web browsing, but the most pleasing models load pages quickly and make it easy to pan around and zoom in on Web pages.

• **Apps** Quantity and quality. Thanks to the iPhone, applications have become increasingly important to shoppers. These programs let you do a lot more with your device whether it's streaming Internet radio, posting Facebook or Twitter updates, reading eBooks or playing high quality games. The iPhone market currently has over 140,000 apps while the Android market has more than 20,000, making it a distant but respectable second in this category.

• **Contacts and Calendar** Sync with your USB or the Cloud? Is it easy to transfer with your PC/Mac contacts and calendar entries. Android phones sync with the cloud; all you have to do is enter an e-mail address and password for various accounts to start loading your device with information.

• **E-Mail and Messaging** The best smart phones help you keep multiple accounts up to date while offering robust attachment support.

• **Music and Video** When it comes to multimedia, there's the iPhone, and then there's everything else. Between Apple's iTunes store and iPod integration, the iPhone OS is the best choice for those looking to load their smart phones up with contents, especially when it comes to wireless music and video purchases.

• **Camera and Camcorder** Smart phones can take pictures and record video. Look beyond megapixels. What's more important is the image quality, speed of the device, and how easy it is to share images and clips.

• **GPS** While GPS technology is common, a smart phone can leverage your address book and give you a bigger screen to emulate a standalone navigation device. Pay attention to how loud and clear the voice is through the smart phone's speaker and how intuitive the menus are to use.

• **Battery Life** How long is long enough? Because voice calls are just a tiny fraction of what today's smart phones can do, the rated talk time for any given device is virtually meaningless. What's more important is how long you can use the phone for checking e-mail, searching the Web, or performing other data-intensive chores. I recommend that the usage time be one entire workday with moderate to heavy usage.

Smart phones are becoming indispensable for today's savvy music educator who needs to accomplish more in less time. Today's leader in smart phone technology is Apple's iPhone with its intuitive touch interface and sleek design. Apple's App Store has created a micro-economy that is a $1 billion-per-year business. iPhone is clearly winning the app development battle, boasting more available programs than for Android, Blackberry, Palm, webOS and Windows Mobile smart phones all combined.

Why are iPhones so popular with developers? There are only three iPhone models while the popular Android phones have many, making it difficult for developers to program apps for so many incompatible phones. The iPhone is also popular for it is audio quality. Androids currently cannot synchronize recording and playback as required by multi-track recording. This is critical for the current trend of music expression, and something music educators must be aware of.

A good Web site to check out for a video demonstrations of how smart phones can be used for education is to do a Web search for "Best Ways to Produce Music on an iPhone."

Also, don't underestimate the capability of smart phones for digital audio recordings. While internal microphones aren't necessarily meant for recording music, microphone-engineered recording apps and tools on smart phones are continually improving.

The Smart Phone's Cousin

You can run iPhone apps on an iPod Touch and have the convenience of having extra iPod storage for music songs and samples while also keeping your current cell phone and provider. All of the apps that run on an iPhone can also run on an iPad. The only drawback to getting an iPad in it's first generation is that it lacks the capability to run programs that use Flash, such as Smart Music.

Smart phone technology is connecting music teachers to their students as never before. There are virtually no limits to the creativity; fun, and imagination this technology affords. Music apps are generally very affordable and in many cases free! Need more proof of the potential of smart phone technology for music educators? Download the Quicktime video at music4education.com/iphone.mov.

Looking for other sources of smart phone instructional materials? Go to www.kuzmich.com/SBO062010.html.

Reference and Music Making

• Smule's Ocarina ($.99 at iTunes, ocarina.smule.com) has been ranked in the Apple's All-Time Top Apps and simulates

playing a real ocarina. By blowing into the microphone and touching your fingers to the fingering markings on the screen, the sound is remarkably authentic. There are many videos on YouTube using the Ocarina in creative ways, including a few great renditions of Led Zepplin's Stairway to Heaven.

• Pocket Shaker (free and $.99 versions at iTunes, (itunes.apple.com/) simulates 25 different percussive instruments.

• Rainstick (free at iTunes, frontierdesign.com/RainStick) acts just like its namesake, making a cascading pebble sound as the user tilts the phone upside down sensitive to the speed of the user.

• iPiper ($.99 at iTunes, speonline.com/ipiper) emulates the bagpipes, complete with sample songs and the history of the instrument. As a musician in a Celtic band, the iPiper was crowd-pleaser for a rousing version of "Scotland the Brave."

• Cleartune ($3.99 at iTunes, bitcount.com/cleartune/index.html) features a traditional "note wheel" interface as well as a fine-tuning meter. In addition to standard tuning, it can also be customized for different temperaments, transposing instruments, and used as a pitch pipe.

• iTick (free at iTunes,) has a simple and sleek design. This free app packs a punch with a wide selection of time signatures, Italian tempo selections that automatically correspond with BPM ranges, and customizable sounds for both the down and up beats.

• Pianofly Pro Synth ($2.99 at iTunes, www.minimusic.com/index.html) features the best scrolling keyboard available with a full 88-note range that allows users to check pitches quickly and accurately. And as a synthesizer, it also has 80 preset instrument sounds that can be customized, as well as the ability to create your own. As a non-keyboard instrument, sometimes it is best to hear something played out on the piano when learning a difficult chromatic passage, and for that I use my multi-tasking Pianofly.

• iReal Book ($7.99 at iTunes, www.irealbook.net) eliminates the need to carry around a bulky Real Book for quick references as iRealBook has the chord changes for over 900 jazz standards, as well as the ability to transpose the changes into any key.

Understanding/Responding to Music

• Key Signature Quiz (free and $.99 versions at iTunes, www.jasonneufelddesign.com) has timed and un-timed key signature identification quizzes. The free version tests only the treble clef, and the paid includes the bass.

• MusicTools Dictionary ($2.99 at iTunes, www.onstagetechnologies.com/products) includes both a music dictionary with over 2,700 entries and a reference charts for markings.

• Shazam (free at iTunes, www.shazam.com) is a music identification app that uses the built-in microphone of the smart phone. When a user holds their phone up to a speaker playing a particular song, the program compares the sound to a central database of acoustic footprints and finds a match, where it will then give you the name of the song, along with a biography and discography of the artist and if available, links to buy the song on iTunes and/or Amazon MP3, as well as YouTube videos of the song. It is very accurate with most pop songs, and will even identify some classical pieces, although this is less reliable because there are so many varying versions recorded of the same piece. As a teacher of a survey of American popular music, I find Shazam valuable in listening to music to be played to my classes and then downloading all of the appropriate information about the recording, the group and other bio related information to share with my classes within seconds.

• Karajan Music and Ear Trainer (free and $14.99 at iTunes, www.karajan-eartrainer.com/en/) provides detailed lessons for identifying not only intervals but also scales, pitch, and tempo with aural examples. The beginner version has the complete first level of the paid version.

Dr. John Kuzmich Jr. is a veteran music educator, jazz educator and music technologist with more than 41 years of public school teaching experience. He is a TI:ME-certified training instructor and has a Ph.D. in comprehensive musicianship. As a freelance author, Dr. Kuzmich has more than 400 articles and five textbooks published. As a clinician, Dr. Kuzmich frequently participates in workshops throughout the U.S., Europe, Australia, and South America. For more information, visitwww.kuzmich.com.