INTRODUCTION TO THE MECHANICS OF IMPROVISATION

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This chapter first focuses on establishing a clear definition of what improvisation is (and is not), provides a framework for developing improvisation skills, and discusses basic guidelines for selecting appropriate repertoire for beginning improvisation. Next, it provides an overview of technology hardware and software appropriate for teaching improvisation in a private lesson, classroom, or lab setting. I also survey existing materials including the Aebersold, Essential Elements, and Standard of Excellence methods and SmartMusic. SmartMusic is a subscription-based application that includes the entire Essential Elements and Standard of Excellence methods. SmartMusic also includes outstanding ear training activities, blues/ii-V-I/iii-VI-ii-V-I scale and arpeggio exercises, rhythm section accompaniments, and transposition exercises. A user can even change the tempo and key of an existing audio recording! In the iPad connection portion of this chapter, I discuss available exercises and materials in the free SmartMusic application that comes with your paid SmartMusic subscription. Finally, I wrap up the chapter with a hands-on activity to "break the ice" and get students feeling comfortable and free to improvise.

Improvisation is . . .

[▶] *See Example 1.1 on the companion website for a PDF of my "Improvisation Is . . ." Keynote Presentation.*

. . . composing in the moment with restrictions

These restrictions are generally the rhythm and harmony of the tune. The improviser selects rhythms and notes that cause tension and release as he or she plays. Improvised notes that do not fit in the chord cause tension until they release into chord tones. The improviser chooses rhythms that groove with the rhythm and those that cause syncopation. So, when the improviser begins performing, he or she isn't really dealing with a blank canvas; rather, the improviser begins with a backdrop (harmony and rhythm of the tune) and adds the foreground. Although the improviser is free to play anything, whatever he or she creates will interact with the harmony and rhythm, and all of these decisions are being made instantaneously throughout the improvised performance.

Here's a brief analogy:

My son recently received a Star Wars sticker book for the holidays. In the front of the book, there are various movie scenes such as a desert, space, and what looks to be the inside

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of a spaceship. In the back of the book are various stickers that can be applied to each scene. Grayson is able to tell a story by building a sticker scene based on the background that already exists on the page. My older son, Julian, and I always get a chuckle from an unexpected sticker such as one that sits sideways or obviously doesn't fit (I mean we all know Wampas like the cold and don't live in the desert!). So as Grayson improvises (creates on the spot), he interacts with the background to create tension/release and groove/syncopation.

The great composer, Igor Stravinsky, commented on composing music with restrictions in the book *Poetics of Music in the Form of Six Lessons*:

> What delivers me from the anguish into which an unrestricted freedom plunges me is the fact that I am always able to turn immediately to the concrete things that are here in question. . . . [I]n art as in everything else, one can build only upon a resisting foundation: whatever constantly gives way to pressure, constantly renders movement impossible. My freedom thus consists in my moving about within the narrow frame that I have assigned myself for each one of my undertakings. The more constraints one imposes, the more one frees one's self.[1]

Stravinsky is certainly not a composer we think of as bland or uncreative; I'd classify him as one of the most daring composers of the early 20th century, always pushing the boundaries of musical acceptability. Throughout this text I will recommend improvising within a narrow framework such as a specific scale or set of chord tones. Students must improvise in the box with significant restrictions to maximize creativity.

. . . limited by three main factors: technical ability, ear development, and music theory knowledge.

1. **Technical ability:** My main instrument is saxophone. I have spent countless hours over the past 25 years practicing the saxophone, learning my scales, arpeggios, melodies, etc., on *that* instrument. When I improvise on saxophone, I have more technical freedom because the instrument feels almost like an extension of myself. In fact, when I'm examining a new piece of music, I often find myself fingering notes on my "air sax" to more accurately hear the notes in my head. I also play clarinet, flute, keyboard, and guitar. Guitar is my weakest instrument by far and because of my drastic technical limitations on guitar, I can use only simpler phrases when I improvise on that instrument. I find the same applies to my younger students. The more they become familiar with their instrument by practicing all of their fundamental technique, the more freedom they have when improvising. Encourage students to focus on developing proper fundamental technique on their instrument including tone, rhythmic feel, articulation, and technical facility.

2. **Ear development:** The best improvisers hear music in their head and produce it immediately and effortlessly on their instrument. It is essential to rigorously

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1 Igor Stravinsky, *Poetics of Music in the Form of Six Lessons* (Cambridge, MA: Harvard University Press, 1970), 65–66.

train your ear to identify intervals, practice sight-singing melodies (both tonal and atonal), and perform familiar melodies in multiple keys. I encourage my students to select a simple melody (such as *Mary Had a Little Lamb, Happy Birthday*, etc.) and practice playing it in all 12 keys (or at least a handful of keys). I also find it helpful to perform melodies by ear such as those from pop tunes on the radio; instead of singing the melody, perform it on an instrument. It is also essential to listen to a lot of music, especially by great improvisers. Focus on the artist's phrases, tone, and articulation. Many of my jazz students will purchase a book of jazz solo transcriptions and try to perform them without listening to the original recording. This is exactly the wrong thing to do. You first need to listen to the recording until you can just about sing the entire thing. Then use the solo transcription as an aid to perform the solo exactly as the artist did with the exact same inflections and tone. Through this listening and imitation, the student will become a better improviser simply by osmosis.

3. **Music theory knowledge:** First, students must have a basic grasp of music theory including key signatures, 12 major scales, 12 harmonic minor scales, and the 7 modes of the major scale. Second, a student must be able to execute that knowledge on his or her instrument. Of course, this is a tall order for many high school or college-level students and far beyond the reach of most elementary or middle school students. Does that mean to forget about improvising until the student has a firm grasp of all of this music theory knowledge? NO! Students should begin improvising as early as possible, but the teacher must guide them to repertoire appropriate for their theoretical level. For example, it would be a terrible idea to expect a young student to improvise over John Coltrane's *Giant Steps* in which the chords change every 2–4 beats and the key centers change just about as fast. Instead, the teacher must select a more appropriate tune such as Miles Davis's *So What*. As I discuss in Chapter 2, this tune uses only two different scales, and the chords change no faster than every 8 bars. Elementary aged students can learn the two scales and practice various patterns over those two scales and begin improving over *So What* fairly quickly.

. . . something that everyone can do.

In the past, people used to think that either you had it or you didn't. Today, it is obvious that improvisational skill isn't something you are born with. Through listening and ear training, music theory knowledge, and technical development, anyone with a willingness to improvise can be successful. I shouldn't understate the word "willingness" in the previous sentence. It takes a tremendous amount of hard work to become a great improviser, and improvisation is a skill that slowly improves over time. Developing improvisational skill is a marathon and not a sprint! As I discuss in this book, technology can play a huge role in making the journey easier and more enjoyable.

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. . . **for every genre of music.**

From classical to jazz, country to rock, and pop to hip-hop, improvisation can be integrated into every genre of music. At the heart of all jazz music, improvised sections often account for 75% or more of a given recording. Jazz artists generally state the melody at the beginning and end of a performance and take turns improvising throughout the entire middle section. Modern hip-hop artists often improvise, calling it free-styling. Rock and country songs, while more focused on melodic vocal sections such as the chorus, verse, and bridge, will often include short improvised solo sections. In the classical world, young classical musicians are notorious for shying away from improvising. So much of our modern classical musician training focuses only on playing the notes on the page; however, this was not the case in the past:

> Performers in the Baroque era were always expected to add to what the composer had written. For example, keyboard players realized figured basses by improvising chords, arpeggios, and even counterpoints. Vocal and instrumental solo performers applied skill, taste, and experience to realize the full effect of the music by means of ornaments and embellishments.[2]

It is interesting that Bach, Mozart, and Beethoven were all outstanding improvisers. Bach was known as the greatest organ improviser of his day. He would even write out multiple versions of his inventions to illustrate how a student could improvise over the structure of the piece. Mozart was first recognized as an improviser in Vienna, and it wasn't until approximately 10 years later that he became known for his compositions. In an attempt to impress Mozart, a young Beethoven improvised on themes provided by Mozart at a party. All three of these "Mount Rushmore" composers placed improvisation at the heart of their musical training and performance. Today, most classical musicians perform cadenzas and preludes as written in the manuscript, but this was not the case in period performances. These sections were generally improvised by the performer. The great saxophonist, Branford Marsalis, did just this in his 2001 album, *Creation*. Marsalis is best known as an improvising jazz saxophonist and he carried his improvisation skills into the cadenzas of standard classical saxophone works such as the Ibert *Concertino da Camera*. As a student, I studied and performed the Ibert and it was brilliantly refreshing to hear an improvised cadenza.

For more interesting notes about classical musicians and improvisation, visit https://ericbarnhill.wordpress.com/facts-about-improvisation/.

Developing Improvisation in Musicians

Every master carpenter has a tool box, and he or she has spent years learning how to use each tool effectively. The carpenter has to use a variety of tools to create each new project. As a child, I used to love watching Norm Abram on *The New Yankee Workshop* on PBS create incredible cabinets, tables, chairs, and more out of wood. Norm had more tools in his workshop than anyone I could imagine, at least more than my dad! He always knew which tool would be most

2 Donald Jay Grout and Claude V. Palisca, *A History of Western Music* (New York: Norton, 2001), 361.

appropriate for each step of the project, and he effortlessly went from router to table saw to jigsaw.

Every improviser needs to pull from his or her musical tool box when improvising. The more tools, the greater is the variety of sounds available to the improviser. But remember, you can build a lot with basic tools such as a screwdriver, hammer, saw, and drill! The most essential tools to develop are scales, chord tones, and melodic motifs (called *licks* in the jazz world).

1. **Scales:** Although many scales exist, my top five most important scales are major, mixolydian, dorian, harmonic minor, and blues. Major scales are the foundation of almost all music and it is essential to learn all 12 major scales. Mixolydian (major scale with a flat 7th) and dorian (major scale with a flat 3rd and flat 7th) are derived from the major scale. For songs in a minor tonality, the harmonic minor scale (major scale with a flat 3rd and flat 6th) is essential. Finally, the blues scale is the swiss army knife of scales that can function in major or minor tonality and get you out of any tough improvisation situation.

2. **Chord tones:** The improviser will typically work with a lead sheet that includes the melody of the tune plus the accompanying chords. The top five most important chords to learn are major 7th (Maj7), minor 7th (min7), dominant 7th (dom7), minor with a major 7th (min M7), and minor 7th flat 5 (min7b5 or ø7). The player should be familiar with the 1-3-5-7 of each chord. Practice playing the chords ascending and descending on each chord tone.

3. **Melodic motifs:** Melodic motifs are the *lingo* of the musical world. Just as a writer takes common words and phrases and combines them in ever new ways, musicians borrow, develop, and manipulate melodic motifs to create freshly improvised solos. I suggest starting by borrowing your favorite phrases of great improvisers. For example, my two favorite saxophonists are Dexter Gordon and Sonny Stitt and, while listening to a recording, I will often pause the recording to write out one of their tasty licks. Another way to develop *lingo* is to write out cool phrases you discover through improvising. Sometimes, interesting phrases just come out and it a good idea to capture the phrase before you forget it. Who knows, maybe that phrase ends up becoming the basis of your next musical composition! So through a combination of borrowing phrases from great improvisers and developing your own, the improviser develops an aural catalog of cool licks that can be used throughout the improvisation process.

> **TIP**
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> Purchase a spiral-bound manuscript book and notate melodic motifs that you borrow or create. You will soon develop a large library of improvisational *lingo* in this book.

The best way to learn how to effectively use all of your tools mentioned above is to JUST DO IT! The more you improvise, the more comfortable you will become and the better you will be at improvising. In Chapter 2, Auto Accompaniment Software, and Chapter 4, Music

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Production Software, I detail how to generate custom accompaniments so you will have a backing track to improvise along with. Improvising with a playalong track will help train your ear to identify sounds you like and those that don't really fit. Always practice at a slow tempo so your ear, brain, and fingers can keep up. In Chapter 3, Notation Software, I show you how to use computer notation software to generate technical exercises and write out your own solo (sort of like pre-planned improvisation). This process allows the musician to work out ideas on paper/screen before trying to execute them in the moment. Practice these exercises and solo ideas in the abstract to allow them to flow out of you in the moment during your actual improvisation.

When you are practicing improvisation, keep the following in mind:

1. **Keep your place in the song by focusing on the form of the piece.** Is the song a 12-bar blues, 32-bar AABA, or something altogether different? Knowing the form can help keep you from getting lost while improvising or get you back on track if you do get lost.

2. **Play the "right" notes.** Throughout this book, I'll continually mix in theory and improvisation strategies to limit your tonal palette. Very often it is best to limit yourself to a particular scale or set of chord tones as a beginning improviser. Continually self-monitor while you practice to be sure you stay "in the box."

3. **Use repetition and sequencing.** Obviously repetition means to play phrases more than once. As humans, we crave repetition in music. Select any melody and I'm sure you'll find many instances of repetition. If it works in your favorite melody, it will work in your improvisation. Consciously focus on repeating musical phrases to keep some logical sense to your on-the-spot composition. When you repeat a melodic idea on a different note or in a different tonality this is called sequencing. In the song "I'll Remember April" the first four bars start in G major and the second four bars move to G minor. It is especially effective to perform a given phrase in major and then sequence it to minor in this situation. In "Satin Doll" the first 2 bars use a ii-V progression in the tonic key while bars 3–4 use a ii-V progression a whole step up. Again, it is very effective to play a given phrase in the tonic key and then again a whole step up. In both situations you satisfy the human need for repetition while also adjusting your improvised melodic idea to fit the harmony of the tune.

4. **Practice at slow tempos.** There is simply no need to increase the tempo past your comfort zone. Improvisation is difficult and it takes time to coordinate your ear, brain, and fingers. I will continue to recommend starting slow throughout this chapter and this entire text. All of my private lesson instructors from elementary through college have reminded me that "Perfect practice makes perfect." Don't bother practicing mistakes or pushing the tempo past the limits of your ear, brain, or fingers. Make the most of your practice time by getting it right at a comfortable tempo in the practice room so you will ultimately have more success on stage.

Finally, you must possess *self-confidence.* Whether you call it mojo or swagger, self-confidence is one of the keys to improvisation. Your playing must be rhythmically confident to fit in the

groove or to create exciting syncopation. Your playing must be melodically confident to fit in the harmony. Wimpy playing never leads to a quality performance. Bill Evans, the great jazz pianist, once said, "There are no wrong notes, only wrong resolutions." Hear the music in your head, execute it on your instrument, and, if you miss, you are probably only a half step away from a nice resolution.

Check out this link for more interesting "no wrong notes" quotes from jazz greats:

http://www.bryanjudkins.com/post/149429495/there-are-no-wrong-notes-in-jazz-only-notes-in.

Repertoire Guidelines

Selecting appropriate repertoire for the improviser's level is of utmost importance. As I mentioned, the three limitations of any improviser center around technical ability, ear development, and music theory knowledge. The four types of tunes best for beginning to intermediate improvisers are vamp, modal, blues, and ii-V-I tunes.

Vamp

A vamp is a repeated musical figure (such as a guitar riff). This vamp can serve as the basis for the entire song or just a section of the song. Sometimes only the improvisation section of the song is based on a vamp. Stevie Wonder's "Superstition" is a great example of a vamp tune. This tune starts with a basic drum groove followed by the iconic 2-bar clavinet vamp line. The rest of the tunes builds on the vamp adding vocals and horns. The song eventually moves to a turnaround section that leads directly back the vamp. Over a tune such as "Superstition," the improviser doesn't need to worry about getting lost in the chord changes and he or she has a very limited amount of harmony to deal with.

Modal

Instead of using a complex chord progression, modal tunes use chords based on musical modes generally from the major scale. These tunes will often feature very few chords and the chords will often change relatively slowly. Miles Davis's album *Kind of Blue* features many modal tunes with very simplistic harmony. This allows the beginning improviser to focus on a small number of scales with very clear changes in harmony throughout the tune.

Blues

The blues is a classic form common in jazz, rock, and obviously blues songs. These songs feature a form most commonly 12 bars in length with as few as three chords. While there are many variations on the blues progression, the core of just about all blues songs is the I, IV, and V chords. There are countless examples of blues songs including James Brown's "I Feel Good," Pink Floyd's "Money," and Duke Ellington's "C Jam Blues." The blues allows the musician to clearly begin using various tools to create a more interesting improvisational experience. At the most basic, an improviser can use only the blues scale of the tonic key throughout the

entire song. Taking a step forward, the improviser can use the mixolydian mode over each chord. So in the key of C, the improviser would perform C mixolydian over C7, F mixolydian over F7, and G mixolydian over G7. Finally, the improviser can explore the chord tones of the I, IV, and V chords. By combining all three tools (blues scale, mixolydian mode, and chord tones), the improviser really starts down the road of creating more musically interesting improvisational material. I further explain the basic blues progression and the appropriate improvisation tools in Chapter 2, Auto Accompaniment Software.

ii-V-I

As students gain comfort improvising over vamp, modal, and blues tunes, they are ready for ii-V-I based songs. The ii-V-I progression serves as the foundation of most jazz standards and many pop songs. Although ii-V-I songs often include relatively quick-moving harmony compared to vamp, modal, and blues songs, it is possible to bracket chunks of the tune into a single scale making it easier for a young improviser to solo over this sort of tune. For example, in a 4-bar section that includes Dmin7, G7, and CMaj7, the improviser can bracket all three of these chords under the C major scale umbrella. Tunes with the ii-V-I structure also allow the musician to push further into chord tone arpeggiation. Often these tunes will include sections in a minor tonality, forcing the improviser to explore the harmonic minor parent scale. I further explain the mechanics of improvising over a ii-V-I based song in Chapter 2, Auto Accompaniment Software.

Classroom Technology

When you are teaching in a classroom setting it is essential for your students to be able to see and hear your computer/iPad. This allows the students to follow along at their seats. Some of the gear discussed in this section allows the teacher to easily communicate and share audio with the entire class or individual students for one-on-one instruction.

Seeing the Teacher Device

When I began teaching public school in 2002, it was rare for regular classrooms (let alone music classrooms) to be outfitted with a large computer display device such as an LCD projector with screen or interactive whiteboard. Today, this technology is finding its way into more and more classrooms. At Haverford High School, we have LCD projectors in just about every classroom. At Manoa Elementary, my son's elementary school (and my alma mater!), Smart Boards were placed in every classroom when the school was rebuilt in the early 2010s.

LCD Projectors simply project the teacher's computer/iPad to a screen for large group instruction. If the teacher's computer is in close proximity to the screen, an LCD projector works just fine. In my classroom, my computer is five feet from the screen so I can easily click on the computer and then walk to the projector screen if needed. If the computer is farther from the screen or in the back of the classroom, a wireless keyboard and mouse can allow the teacher to provide instruction from the front of the room near the projector screen. Be sure to create a comfortable teaching position with you at the front of the room facing the students.

The most common interactive whiteboards that I see in schools are SMART Boards and Promethean Boards. Both essentially accomplish the same task. The teacher's computer/iPad is connected to the built-in LCD projector on the interactive whiteboard. After running a quick configuration and setup in the interactive whiteboard software on the teacher computer/iPad, the teacher can now work with his or her device from the actual whiteboard in the front of the classroom, eliminating the need for direct access to the computer mouse/keyboard. I find interactive whiteboards especially appropriate for elementary-aged students although they can be used successfully with students of any age.

When connecting your device you will need to purchase the necessary video cable to connect to your LCD projector or interactive whiteboard. Most commonly you will need a VGA cable. Some newer displays require an HDMI cable similar to the cable used in most cable television boxes. Also check the video output of your computer or device. Since many Windows computers have VGA ports, you will likely only need a single VGA cable with no adapter. Macintosh computers and iPads almost always require an adapter to connect to the VGA cable. For iPads you will need a "lightning to VGA" (iPad 4th generation and newer) or "30-pin dock connector to VGA" (iPad 3rd generation and older) adapter. For Macintosh computers it will all depend on your computer model. Current Macs require a "mini display to VGA" adapter while older Macs used a number of different video output ports. These adapters typically cost $30 to $50.

Follow this link for more information on iPad video adapters:

https://support.apple.com/en-us/HT202044.

Follow this link for more information on Mac video adapters:

https://support.apple.com/en-us/HT201853.

Hearing the Teacher Device

Quality audio playback is needed in any music classroom situation. In the simplest setup, students will connect stereo headphones into their devices and the teacher will have speakers to play back sound from his or her device to the class.

When selecting a set of speakers for teacher device playback you will have a choice between active or passive monitor speakers. Active monitors are self-powered speakers that have a power cable that plugs into a wall outlet. You will need a power supply in close proximity to the active monitors. Passive monitors do not require a power supply; however, you will need to purchase a power amplifier to power the speakers. I suggest purchasing a Crown power amplifier; these amps have been around for years and are the gold standard of power amplifiers. You must match the power amplifier to your passive speakers, so check the power (watts) and resistance (ohms) of your speakers and power amplifier when purchasing so you can match the two. The general rule of thumb is to purchase a power amplifier at least 50% more powerful than your speakers at the given resistance. For example, if your speakers are rated at 600W continuous power at 8 ohms, you'll want a power amp rated at approximately 900W at 8 ohms. Refer to this YouTube video for more detailed information on amp and speaker matching: https://www.youtube.com/watch?v=pUou_noD1Gc.

> **TIP**
>
> Matching amplifiers and speakers can be confusing. I suggest enlisting the assistance of a qualified sale representative from a reputable dealer before making this important purchase.

For audio playback, my preference is to use a lab management system such as the Korg GEC to make sharing audio more seamless and flexible. The newest model is the Korg GEC5. See Figure 1.1 for an image of the Korg GEC5 teacher unit and Figure 1.2 for an image of the Korg GEC5 student communication interface. To set up the GEC5, you must install a student communication interface (SCI) at each student computer station. Sound output from the student computer, keyboard, and headset microphone is routed to the SCI. A CAT-5 ethernet cable links the SCI to the GEC5 teacher unit (GEC5-TU) at the front of the room near the teacher computer. Similar to the SCI setup, sound from the teacher keyboard, computer, and headset are routed to the GEC5-TU. The GEC5-TU can also output sound to room speakers and the teacher can even record the audio output of the GEC5-TU to capture student performances. The main reason to use the Korg GEC5 is that the teacher has supreme flexibility in audio playback, and it is a piece of gear that actually allows a classroom to *function*. Over my 13 years of teaching music technology both in high school and higher education, the one indispensable piece of gear that makes my classroom *work* is the Korg GEC. Administrators are always amazed at how quiet my classroom is and how efficiently I can address student needs and differentiate my instruction. Students can work independently, interact one on one with the teacher, share audio with the class, and work collaboratively with a peer. The GEC

Figure 1.1
Korg GEC5 teacher interface.

Figure 1.2
Korg GEC5 student communication interface.

is the audio nerve center of my classroom and provides the perfect teaching environment for all audio-based activities. The teacher can manage all of the sound right from the front of the room or, with the addition of a wireless router, the teacher can manage the classroom while walking around the room with an iPad or Android tablet.

Digital Instruments

In a music classroom, acoustic instruments can be troublesome simply because they actually produce audible sound. This can make teaching improvisation in a classroom setting very difficult unless there are separate practice rooms or spaces for students to play their acoustic instrument with a computer/iPad that won't disturb classmates. Many teachers opt for digital instruments to solve this issue.

The piano keyboard is the most common solution. When purchasing a piano keyboard you will have a choice between a model with built-in sounds and one without built-in sounds (called a controller). Controllers are generally much cheaper (approx $50–$200) but they must be connected to a computer with software instrument sounds (such as a Mac with GarageBand installed) to produce any sound. Keyboards with built-in sounds can cost significantly more than controllers but they produce sound without the need to connect to a computer/iPad. My preference is to always purchase keyboards with some built-in sounds if your budget permits.

Although keyboards are the most common digital instruments, they are by no means the only option. The EWI (see Figure 1.3) is an electronic wind instrument meant to mimic a saxophone, clarinet, or flute. Although I'm an experienced saxophonist, I found that working on the EWI takes a good bit of practice since it doesn't react exactly like an acoustic wind instrument. With practice, the EWI can be a good option for woodwind players. Electronic drum sets (see Figure 1.4) made by companies such as Roland and Alesis make use of various pads that send MIDI signals to a computer software instrument or an included sound module. Still other digital instruments such as the Novation Launchpad (see Figure 1.5) look much less traditional and can allow students to improvise without prior knowledge of a traditional instrument.

When connecting a digital instrument your computer you may need a MIDI interface. A MIDI interface allows your digital instrument to communicate to your computer/iPad through a USB cable. The M-Audio UNO is my MIDI interface of choice because of its small size, ease of use, and relatively low cost (approx $39). See Figure 1.6 for an image of the

Figure 1.3
Akai EWI MIDI controller.

Figure 1.4
Roland V-Drums
MIDI controller.

Figure 1.5
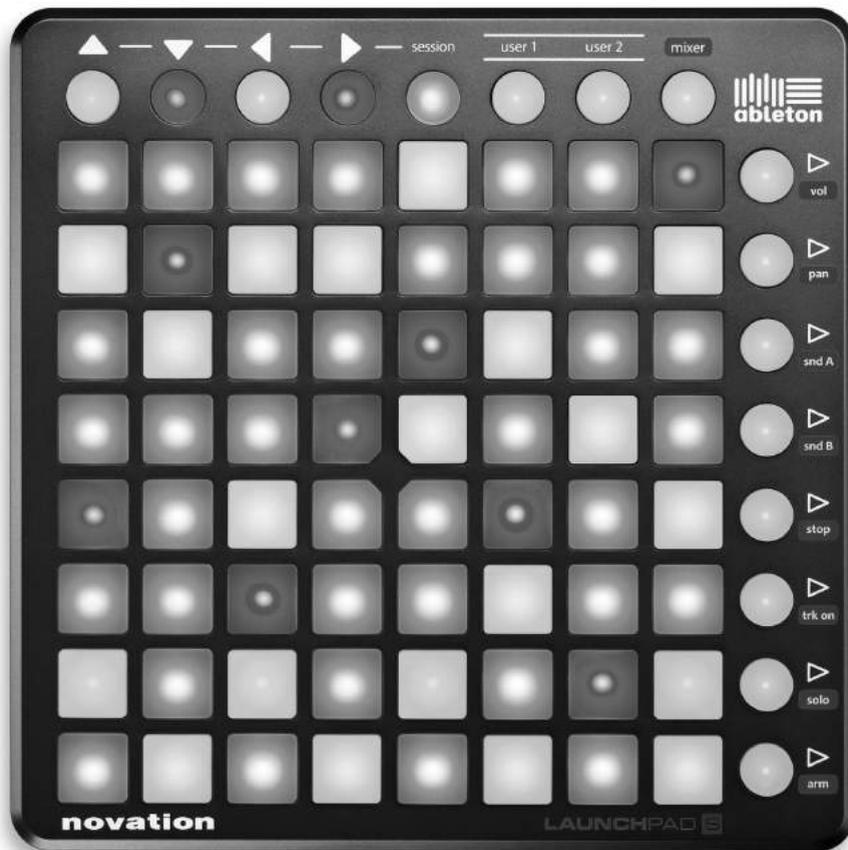Novation Launchpad
MIDI controller.

Figure 1.6
M-Audio UNO
MIDI interface.

M-Audio UNO. Connect the USB end of the UNO into your computer/iPad and the MIDI ends to your digital instrument's MIDI in and out. If your digital instrument has a direct USB cable out of it, your digital instrument most likely has a built-in MIDI interface and you will not require a separate MIDI interface. If you are using an iPad you will also need a separate adapter called the "Lightning to USB Camera Adapter" (for 4th generation iPad and newer) or "Apple iPad Camera Connection Kit" (for 3rd generation iPad or older). I know it is odd to call this adapter a "Camera Kit" but it really just converts your iPad's input port to a USB port.

How Can Technology Facilitate the Development of Musicians' Skill in Improvising?

This text covers auto accompaniment software, notation software, and music production software as well as web resources for listening, posting, and organizing material for students. Below is a summarized list of various activities that will be expanded on throughout the remainder of this text:

- Create play-along recordings so students can hear their improvised ideas with the rhythm and harmony.
- Use software to generate a solo, create appropriate notation, and print for practice.
- Notate scale and chord tone exercises.
- Notate melodic motifs and transcribe improvised solos.
- Transpose notated exercises for various instruments and ranges.
- Have students write out a solo ahead of time and then perform it on their instrument.
- Edit audio recordings to highlight important aspects of the performance.
- Develop listening playlists on YouTube and/or Spotify.
- Develop a series of podcast episodes that illustrate beginning improvisation concepts.
- Develop a website to organize all of your materials and so students can easily access files from home.

Existing Materials and Methods

My first use of technology with improvisation came with the Jamey Aebersold play-along books (see Figure 1.7). Each book includes a handful of jazz tunes transposed for concert, bass clef, E♭, and B♭ instruments plus a CD accompaniment. The accompaniment usually includes drums, bass, and piano so a melody instrument such as saxophone can perform the melody and improvise over the tune. The accompaniments are typically mixed with the bass in the left channel only, piano in the right channel only, and drums in both channels. Because of this setup, the improviser could mute the piano by unplugging the right speaker or the bass by unplugging the left speaker. While many volumes of Aebersold books focus on tunes, others focus on common chord progressions or scales that improvisers often encounter, and Aebersold creates exercises out of each in all 12 keys. Jamey Aebersold has published more than 100 improvisation play-along books and various other practice aids. Explore the full collection of Aebersold materials at http://www.jazzbooks.com/.

Figure 1.7
Jamey Aebersold's
Volume 54:
Maiden Voyage
play-along book.

Listed here are some of my favorite Aebersold volumes:

- Volume 3: The ii/V7/I Progression
- Volume 7: Miles Davis
- Volume 25: All-Time Standards
- Volume 31: Jazz Bossa Novas
- Volume 37: Sammy Nestico
- Volume 54: Maiden Voyage
- Volume 50: The Magic of Miles Davis
- Volume 65: Four and More

In terms of band methods, the two primary resources are *Essential Elements Jazz Method* published by Hal Leonard (see Figure 1.8) and *Standard of Excellence Jazz Method* published by Kjos (see Figure 1.9). Both methods include improvisation studies and short method book-style exercises;
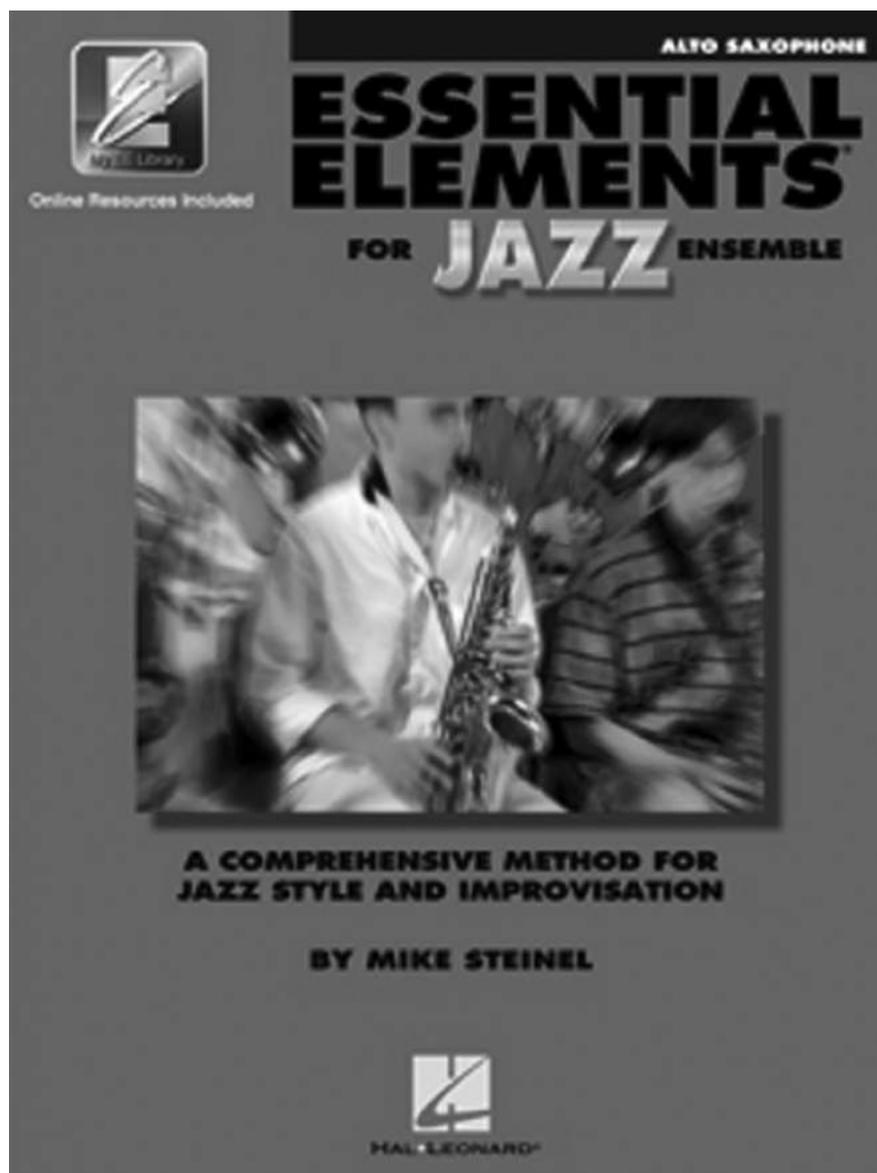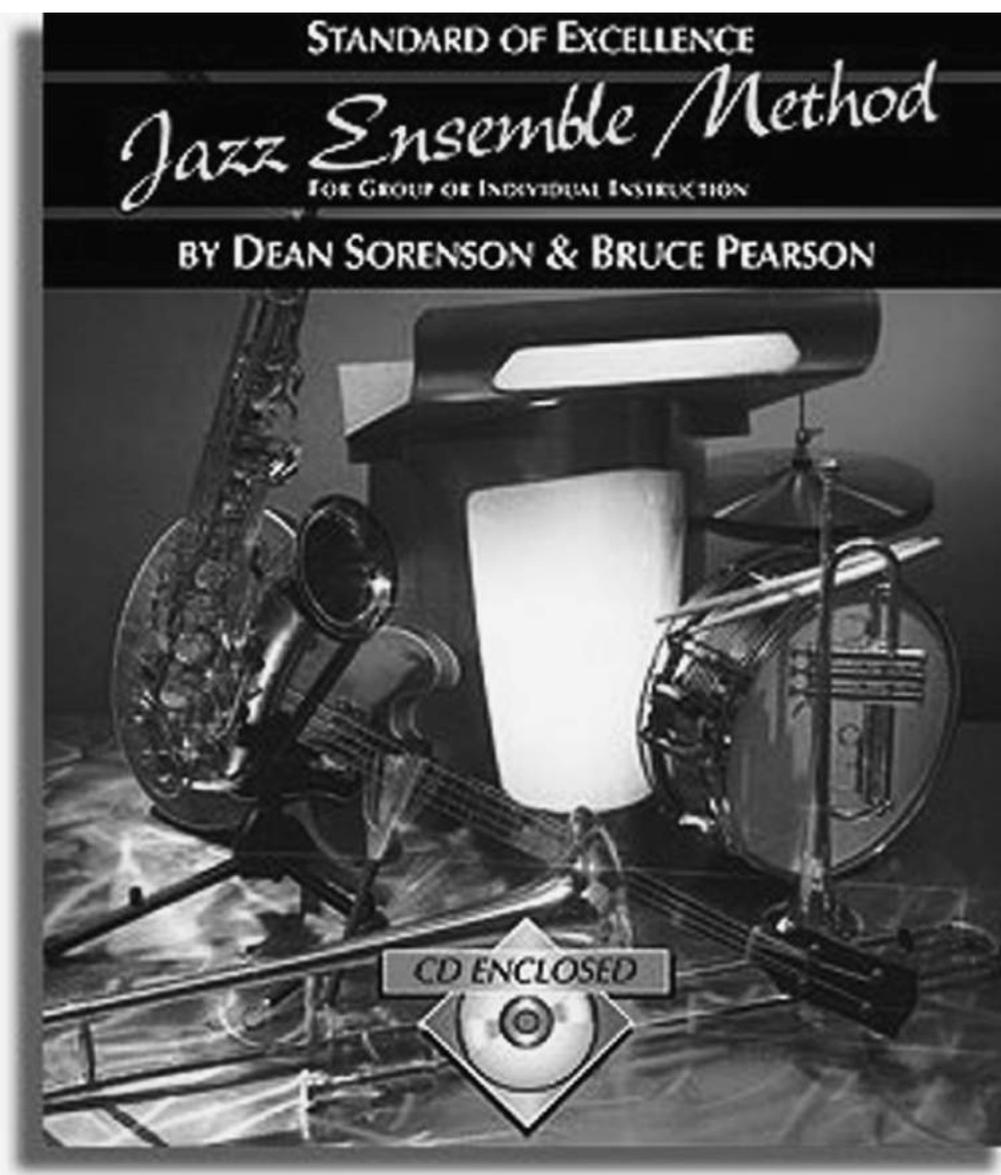

Figure 1.8
Essential Elements Jazz Method.

Figure 1.9
Standard of Excellence Jazz Method.

and full band arrangements and recordings of each exercise/arrangement are available on the included CD. The Hal Leonard series includes the ensemble method, *Jazz Standard* and *The Blues* play-along books, and a handful of grade 1-2 ensemble works appropriate for small or large ensemble. The play-along materials include computer software that allows the student to adjust the tempo of the tracks. The Kjos series contains the basic jazz ensemble method, advanced jazz ensemble method, three grade 1 full band arrangements, and two grade 2 full band arrangements.

- For more information on the *Essential Elements Jazz Method* published by Hal Leonard visit http://www.halleonard.com/ee/band/jazz.jsp.
- For more information on the *Standard of Excellence Jazz Method* published by Kjos visit http://www.kjos.com/sub_section.php?division=6&series=80.

SmartMusic is practice software developed by MakeMusic (the creators of *Finale* music notation software). See Figure 1.10 for an image of SmartMusic software on a Mac/PC. SmartMusic

Figure 1.10

SmartMusic software for Mac/PC.

is available as a yearly subscription, and students can purchase it for only $40/year. Educator subscriptions cost $140/year and include access to a classroom interface so the teacher can easily keep track of student progress. Both subscriptions include identical repertoire material and software. Although $40 may seem like a significant yearly investment for some students, the SmartMusic library is extremely extensive and includes accompaniments for scale/arpeggio exercises, ear training, sight-reading, standard solo repertoire, full band/orchestra/choir repertoire, and every standard method book with music on-screen. Many students skip purchasing a paper method book and opt to subscribe to SmartMusic for about $25 more than a paper method book since SmartMusic already contains the full method book plus hundreds of additional resources. Here's some additional information from http://www.smartmusic.com/:

> Student practice is focused because they receive immediate feedback while listening to their performance and seeing the correct and incorrect rhythms and pitches on-screen. It also allows the teacher to provide students with the individual instruction and customized feedback needed to get better faster. Students are also able to hear their part in context with SmartMusic's professional background accompaniment, giving them a pitch and rhythmic reference when practicing at home.

In addition to the included repertoire, Finale software owners can create custom materials by exporting any Finale file as a SmartMusic file and then importing that new file into SmartMusic. When exporting as SmartMusic, you will have a choice of labeling the file as *Assessement, Solo,* or *Ensemble.* An *Assessment* file grades the student performance. A *Solo* file follows student tempo changes and permits transposition. An *Ensemble* file allows the student to mute selected instruments/voices.

After you purchase a SmartMusic subscription, download the SmartMusic application from http://www.smartmusic.com/support/downloads/. Login using your username and

password and select *Find Music* on the left side of the screen. For practice focused on improvisation, I suggest exploring the following categories:

1. Exercises:
   a. **Scales:** This section includes major, minor (natural, harmonic, and melodic), chromatic, whole tone, pentatonic, and diminished scales in a variety of patterns. Major and harmonic minor scales will serve as the basis for much of our vamp and modal improvisation.
   b. **Arpeggios:** Knowing chord tones will eventually be important for students to take the step beyond simply improvising on a given scale. This section includes exercises for all ~~triad~~ qualities; however, I would focus primarily on the major, minor, and dominant 7th chords.
   c. **Jazz:** This section includes exercises on the blues scale, ii-V-I scales/arpeggios, and iii-VI-ii-V-I scales/arpeggios. The blues progression and ii-V-I tunes will be used throughout this text.
   d. **Blues Licks:** This section is all about ear training! SmartMusic plays a phrase and you respond with the same phrase—and remember: SmartMusic will evaluate your performance. Explore the keys of F, B♭, C, G, and E♭ (the most common keys for blues progressions) and the variety of feels/ styles (slow, medium, fast, swing eighths, straight eights, New Orleans, and rock).
   e. **Play by Ear:** Although this section is labeled "classical ear training," any improviser can benefit from exploring the seven levels offered here.
2. **Jazz Improvisation:** This section includes play-alongs with music on-screen from the Alfred MasterTracks series, Gordon Goodwin's Play-along series, SmartMusic Improv series, and Wynton Marsalis series. Each tune includes the chord progression, and many include the melody on-screen. Students can transpose the tunes to any key and also display patterns such as 1-3-5-7 or 5-3-2-1 for each chord as a practice aid. When using the patterns, students can also select "Learn Chords" to omit 1-3 notes from the chord pattern. Perhaps the coolest parts of these materials are the piano, bass, and drum transcriptions. These parts are available from the drop-down menu in the upper left corner and display the exact transcription of each accompaniment part. This is a great way to actually show a chordal instrument player how to voice a chord, a bass player how to walk over a progression, or a drummer how to play a particular groove or fill.
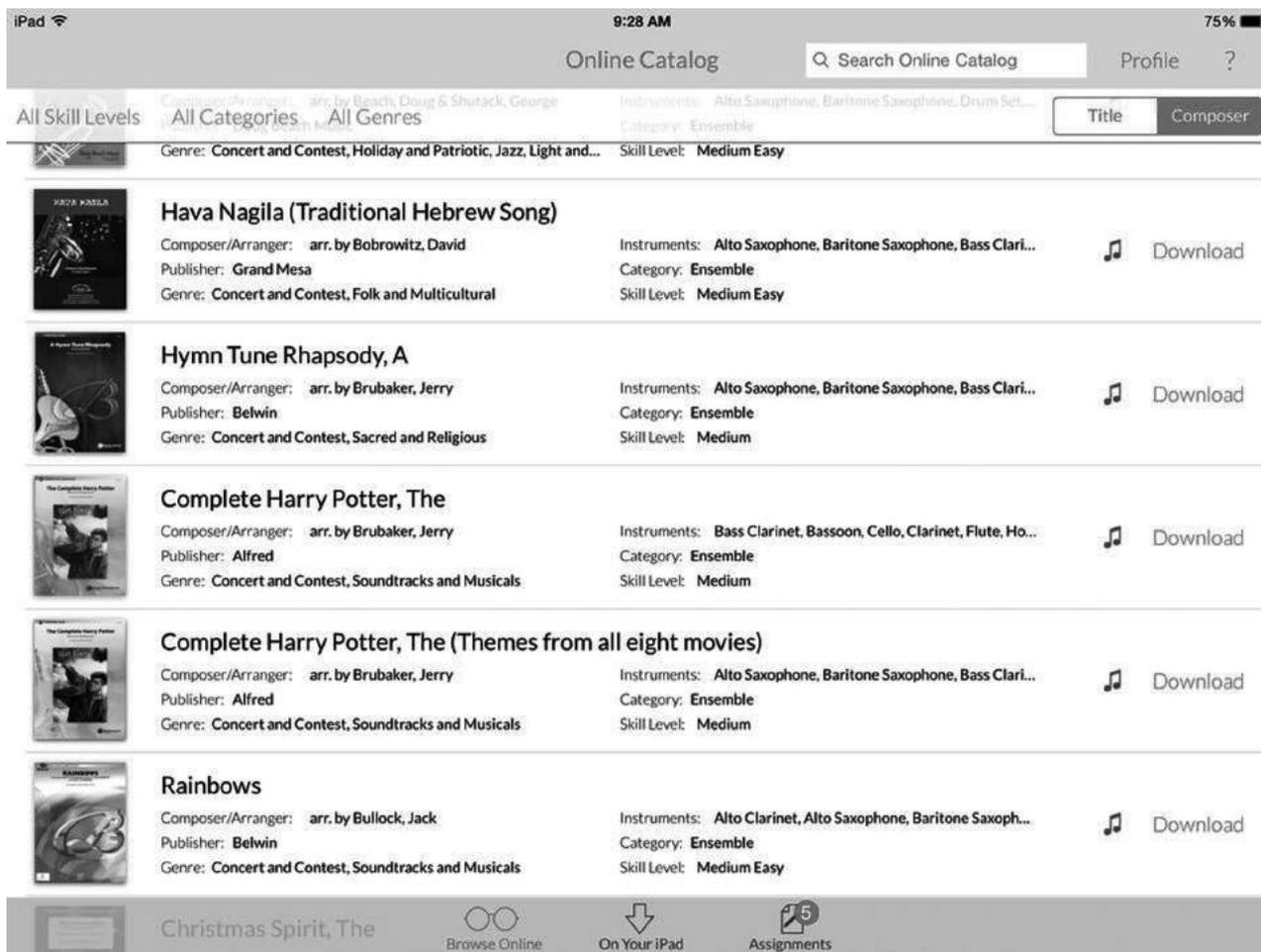
iPad Connection: SmartMusic for iOS

Available since 2014, the long awaited SmartMusic app brought the power of the desktop application to the iPad tablet (see Figure 1.11). Although the iPad version lacks some features

Figure 1.11

SmartMusic application for iPad.

and does not include 100% of the library material from the desktop version, having the most-used SmartMusic material on my iPad is incredibly convenient.

1. Download and install the SmartMusic app from the Apple App Store on your iPad or via iTunes on your desktop computer.
   a. Download link: https://itunes.apple.com/us/app/smartmusic/id638851328?_ga=1.26756789.940862473.1442405231.
   b. For more information and video demonstrations visit http://www.smartmusic.com/mobile/.
   c. For the online SmartMusic app user manual visit http://www.smartmusic.com/onlinehelp/mobile/.
2. Tap *Profile* in the upper right corner. Select your primary instrument and any additional instruments you'd like available in all musical activities in the app. You can only select a primary and four secondary instruments.

TIP

When you select an instrument you will also have the other instruments in that family available. For example, if I select *Alto Saxophone* in my profile, I will automatically have soprano, alto, tenor, and baritone saxophones available in the musical activities.

3. Tap *Find* at the bottom of the screen.
4. Tap *All Categories* and select *Exercises*.
5. Swipe up until you locate *Jazz* and tap it.
6. In the next few screens tap *Blues > Quarter Notes > 1 Octave Up*.
7. You are now at the main playback screen (see Figure 1.12). Set your instrument in the upper left corner.

Figure 1.12

SmartMusic app for iPad main playback screen.

8. Tap the *Metronome/Tuner* icon here in the top center of the screen. Adjust the tempo to a comfortable speed and tune your instrument.

TIP

Tap *My Part* to hear the notes on-screen along with the accompaniment.

9. Tap the *Microphone* icon here to begin playback. As you play, SmartMusic is listening to and evaluating your performance. When you have finished the take, you will notice red and green notes on the staff. Red notes indicate wrong pitches/rhythms while green notes indicate correct ones. SmartMusic will also give you a percentage for each take.

TIP

Tap the screen during playback to pause or stop the take.

10. Tap the *Microphone* icon 🎤 ~~here~~ again to do additional takes.

11. Tap the *Headphone* icon 🎧 ~~here~~ to listen to your performance. As the file plays, you can adjust the balance between your microphone and the accompaniment.

12. Select the best take, tap the *Share* icon 📤 ~~here~~ in the upper right corner, and tap *Mail* to email a recording of your performance.

13. Tap the letter of the key and select a new key. Continue practicing this scale in all 12 keys.

TIP

Tap the *Cycle* icon to the right of the *Microphone* icon in the top center to cycle the exercise to all 12 keys. See Figure 1.13.

Figure 1.13
Cycle options in the SmartMusic app.

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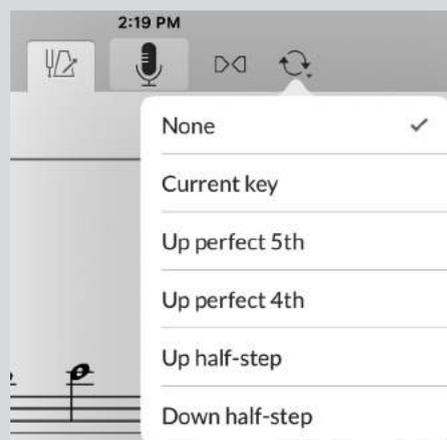
14. Tap *Back* in the upper left and continue to tap that corner to back out of the *Blues* exercises.

15. Explore the other exercises available under the *Jazz* category including *Blues, II-V-I Scales, II-V-I Arpeggios, III-VI-II-V-I Scales*, and *III-VI-II-V-I Arpeggios*. As previously mentioned in this chapter, these scales and chord progressions are extremely common and very important to your development as an improviser.

16. Navigate to the main *Exercises* page of the app and select *Blues Licks > Blues in B♭ > Rock Blues in B♭*.

17. Tap the *Microphone* icon 🎤 here to begin playback. In this ear training activity the goal is to repeat the computer generated part exactly. As usual, SmartMusic will evaluate your performance and the same listening, sharing, cycling, and key options from the previous exercise are available.

18. Tap *Back* in the upper left and continue to tap that corner to back out of the *Blues in B♭* activity. Explore the other blues ear training available under *Blues Licks* including *Blues in F, Blues in C, Blues in G*, and *Blues in E♭*.

22

> **TIP**
>
> The other exercise categories most applicable to improvisation include *Arpeggios, Intervals, Play by Ear*, and *Scales*. I suggest incorporating one of these exercises played in all 12 keys in your daily practicing. Remember that technical ability is a limiting factor in improvisation and it is important to constantly foster your technical development.

19. Back out to the main *Find* area of the app and tap *Reset* in the top row to bring everything back to default value.
20. Under *All Categories* select *Jazz Improvisation*.
21. Locate *Alfred MasterTracks, Blues* and open *T's Blues*. This song follows a 12-bar blues form with relatively basic chords. I delve deeper into the blues progression in Chapter 2 of this text.
22. Practice playing the melody using the music on-screen. There is ample space to improvise throughout the middle of the tune.

> **TIP**
>
> Unlike the desktop version, the iPad version of SmartMusic currently does not display chord patterns.

23. Tap the instrument selection area in the upper left corner and swipe up to reveal the piano, bass, and drum transcriptions. Invite rhythm section players to explore these transcriptions to help their comping technique.
24. Explore the other repertoire available under *Find > Jazz Improvisation* including *Alfred MasterTracks* (*Blues* and *Fusion*), *Rockin' Blues, Straight-Ahead Blues*, and *Strayhorn & More*. I particularly enjoy the *Strayhorn & More* collection that includes some very well-known tunes performed by the Duke Ellington Orchestra with wonderful melodies and chord progressions. Improvising on these tunes will be a challenge for intermediate to advanced improvisers and are not suitable for very beginning improvisers.

Breaking the Ice: Percussion-Only Improv Jam

[▶] *See Example 1.2 on the companion website for an example audio recording of the "Percussion-only Improv Jam."*

Imagine going to a party with people you never met before. Things generally feel awkward until one person steps up and introduces himself or herself, striking up a conversation. It then takes time to feel comfortable with that new person before you start revealing details of your personal life. When improvising, students need a chance to "break the ice" in a non-threatening

environment with a supportive teacher and peers. The *Percussion-only Improv Jam* can do just that in a piano lab environment with the Korg GEC5.

1. Using the Korg GEC5 in a piano keyboard lab, group four students together.
   a. Select Group mode in the iPad or desktop GEC5 application.
   b. Click and hold on each student icon until it turns blue.
   c. After you have selected each student, click *New Group* in the lower left corner. See Figure 1.14 for an image of students grouped in quartets.

Figure 1.14
Students grouped in quartets in the Korg GEC5 application.
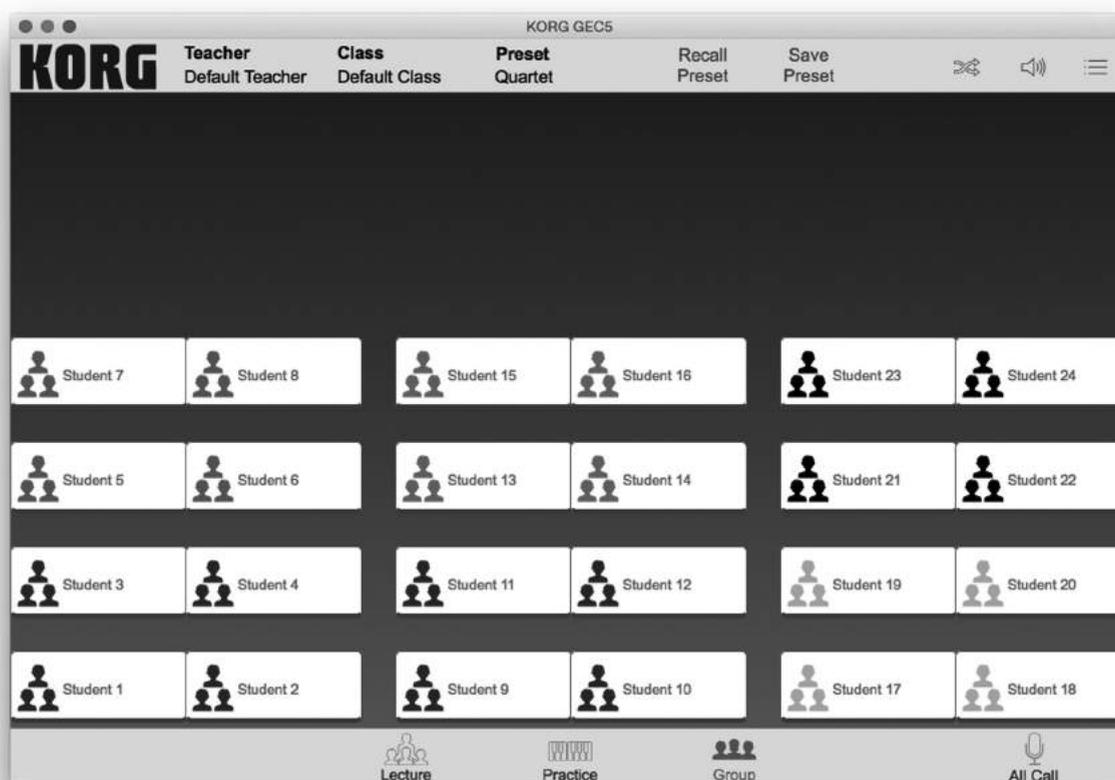
> **TIP**
>
> Instead of manually assigning students to groups, click *Recall Preset* in the top center of the screen and select one of the auto group options such as duet or quartet.

2. Direct students to open the General MIDI (GM) drum patch on their keyboards. This is typically found by going to the GM bank on the keyboard and going past

sound 128. Some keyboards require you to press the GM bank button twice to access the GM drums bank.

3. Explore the full set of drum/percussion sounds available in this patch. This GM drum bank is common to almost all keyboards and a full GM drum map is available here: http://www.mindwaremusic.com/SoundsetterHelp/scr/GMDrumMap.html .

TIP

I suggest downloading and printing a GM drum map for each student to reference throughout this project. Encourage students to do an Internet search for the percussion instrument they select for this activity to gain historical and contextual knowledge of the typical use of the instrument in acoustic musical ensembles.

4. Assign each student to a single key or group of keys. I suggest the following drum configuration to start. See Figure 1.15 for keyboard placement of these instrument sounds in a standard GM drum kit.
   a. Student #1: Kick drum and snare drum
   b. Student #2: Hi-hat and ride cymbals
   c. Student #3: Tambourine and cowbell
   d. Student #4: Congas

Figure 1.15
Suggested drum configuration for percussion-only improv jam activity.
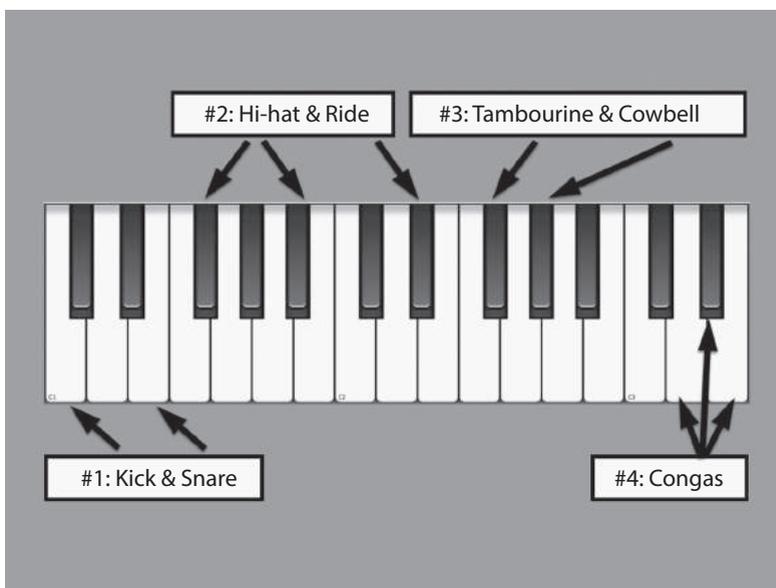
5. Encourage one student to develop a 1–4 bar rhythmic groove. Layer in additional students one by one. Be careful to avoid overly busy rhythms so each instrument can have its own rhythmic place in the composition.

> **TIP**
>
> Students should notate their selected rhythm for future reference. If students are having difficulty transcribing their rhythm, they can perform the rhythm into GarageBand or Note Flight and view/print the computer generated notation. I delve into GarageBand music production software in Chapter 4 and Note Flight notation software in Chapter 3 of this text.

6. Once students have a basic idea of how each rhythm functions in the composition, encourage them to improvise some variations throughout the performance.

> **TIP**
>
> To create a rhythmic variation:
> * Play the rhythm in half-time by doubling the length of each note.
> * Play the rhythm in double-time by halving the length of every note.
> * Drop out one or more of the notes.

7. For advanced groups, have each student select a different drum/percussion sound to develop a contrasting B section. Students can then perform the composition in an ABA form to add interest for a longer performance.

> **TIP**
>
> Although the Korg GEC5 is the most ideal way to execute this activity, consider modifying the task above to suit your specific classroom. Here are some suggested modifications:
>
> 1. **Keyboard lab without the Korg GEC:** Purchase a 4-input mixer (such as the Mackie 402VLZ4 - $99.99) and a headphone amplifier (such as Behringer MicroAMP HA400 - $24.99). Connect the L/mono output of each keyboard into the mixer inputs. Connect the main or headphone output of the mixer to the headphone amplifier input. Connect student headphones to each output of the headphone amplifier. Optional: You could record the performance using the tape output of the mixer connected to a handheld digital recorder (such as the Zoom H5 - $269.99) or computer with audio interface (such as the M-Audio M-Tracks II- $99.00).
> 2. **Classroom with miscellaneous percussion instruments:** Instead of using keyboard percussion, use acoustic percussion instruments such as shaker, tambourine, drums, cymbals, congas, etc. Consider recording improvised student performances using a handheld digital recording device or computer with audio interface.

Chapter 1 Review

1. Describe the importance of restrictions in improvisation.

2. Since improvisation is limited by technical ability, ear development, and music theory knowledge, identify strategies to begin teaching improvisation to young musicians. For example, select repertoire with limited chord changes such as Miles Davis's "So What."

3. Improvisation is present in every genre of music. Select a musician from any genre or period and describe the role of improvisation in his or her music.

4. Selecting appropriate repertoire is paramount. Identify at least two tunes from each category (vamp, modal, blues, and ii-V-I).

5. *Scenario:* Your school principal has funding available to enhance the technology currently in your classroom. *Challenge:* Create a budget for technology equipment you'd request to help teach improvisation in your classroom. I suggest including gear to see/hear the teacher's computer, share audio in the classroom, and any digital instruments or accessories you'd require.

6. Compare and contrast the four existing materials and methods discussed in this chapter (Aebersold Play-alongs, *Essential Elements Jazz Method, Standard of Excellence Jazz Ensemble Method*, and SmartMusic).