Teaching and Learning Jazz Music Improvisation: An Investigation of Approaches Using Q Methodology

by

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Abstract

Learning to improvise jazz music is an exceptional feat of human cognition, and although this is the ultimate accomplishment of jazz musicians, approaches to teaching improvisation are highly variable. There is little agreement, and limited research on best teaching methods for learning to improvise jazz music. The research reported in this thesis explored jazz musicians' viewpoints regarding most effective approaches to teaching and learning to improvise using Q methodology, with the intent of synthesizing a constructive pedagogical framework for jazz improvisation. Six orientations to teaching improvisation were investigated: theory-based, aural, sequential, immersion, imitation, and creativity.

Twenty-four jazz musicians were recruited, 12 post-secondary students and 12 professionals/teachers. Four participated in an email survey, and 20 performed Q sort interviews. Three-hundred-and-sixty-one statements were amassed to form a concourse that comprehensively represented jazz musicians' viewpoints on how best to teach and learn to improvise, and a representative sub-sample of 47 statements was selected using emergent themes. Each participant who completed a Q sort ranked the 47 statements according to their importance followed by an interview to provide a detailed explanation of their ranking. The Q sort configurations were entered into data analysis software (PQMethod) which performed factor analysis to group participants with similar viewpoints.

The optimum solution revealed three factor viewpoints on how best to teach and learn jazz music improvisation. Statement weightings for each factor and interview transcripts were reviewed to interpret and name the viewpoints according to the perspectives expressed: The Pragmatic Emulator, Listen and Just Play, and The Jazz Communicator. These viewpoints could be used as a conceptual framework for designing three discrete approaches to teaching jazz improvisation. However, a blended developmental approach that combines the viewpoints is proposed, which incorporates all of the orientations identified as important for teaching improvisation: theory-based, aural, sequential, immersion, imitation, creativity, plus communication. The three viewpoints identified appear to represent learning or cognitive styles that are intrinsic traits unrelated to environmental influences. The best way to learn to improvise is very individual, and may be related to learning styles. Therefore, teaching improvisation must be tailored to each learner's style to be successful.

Keywords: Jazz music improvisation pedagogy; Q methodology; music learning styles; learning to improvise jazz music; teaching jazz music improvisation

I dedicate this dissertation to my partner in life Mike who promotes (and provokes) me to be the best that I can be.

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List of Acronyms

♫	Statement included in the Q Sample
CMP	Contemporary Music Project
DLPFC	Dorsolateral prefrontal cortex region of the brain
fMRI	Functional magnetic resonance imaging
LOFC	Lateral orbitofrontal cortex
MMCP	Manhattanville Music Curriculum Project
ORE	Office of Research Ethics
PCA	Principal Components Analysis
Q	Q Methodology
REB	Research Ethics Board
SFU	Simon Fraser University
VIU	Vancouver Island University

Glossary

Audiation	The ability to pre-hear in your mind what you are about to play or sing.
Chops	Technical skill on your musical instrument for playing jazz. May have been coined because of the mouth muscle development that enables a horn player to play for prolonged periods, and requires an extended practice routine to develop.
Chromaticism	Using chromatic notes (semi-tones) in your improvised lines.
Combo	Small group of jazz musicians playing together such as a trio or quartet.
Comping	Accompanying other players by playing chords, usually performed by the guitar and piano in the rhythm section.
Concourse	A collection of statements that includes all relevant viewpoints on the research topic.
Conditional knowledge	The ability to judge which skill and knowledge to use when (i.e. knowing *when and why*).
Confounded Q sort	Q sorts that loaded significantly onto more than one factor and thus shared the viewpoint of more than one factor.

Consensus statement	Statements that were ranked similarly by all three factors (statistically significantly), and therefore represent viewpoints that are held in common by all participants, and by all three factors.
Declarative knowledge	Knowing *that*.
Differentiating statement	Statements that one factor feels are important but another factor does not, so they set those factors apart and signify each factor viewpoint's individuality.
Eigenvalue	Indicates a factor's statistical strength and explanatory power. A factor with an eigenvalue (EV) of less than 1 accounts for less study variance than a single Q sort (Watts & Stenner, 2012, p. 105).
Engram	Neural circuitry for an automated physical activity often referred to as a motor program. Examples would be a tennis stroke, an end-goal kick, or a triple axel jump in skating.
Explained variance	The amount of variance that each factor represents. Closely related to eigenvalue and derived from the eigenvalue through a mathematical equation.
Improvisation or Improv	A spontaneous performance of an original, meaningful, musical work that is not notated nor a memorized composition, and is recognizable as conventional jazz (in the style of American jazz from 1920 to 1960).
Leadsheet	Standardized format for a song sheet that is displayed on musical staff paper with the chord changes, the melody, and the words of the tune.
Lick	A short melodic series of notes that is often technically challenging and used in improvised solos – licks are practiced repeatedly in all keys so that they can be played spontaneously while improvising – they are often lifted from other jazz musician's solos.
Modal music	Music that is based on scales other than the major and minor.
Motif	A short melodic or rhythmic sequence of notes that creates a single impression and could be considered a theme; a motif is often repeated and developed throughout an improvised solo.
Organum	Ancient Western music (c. 1000) where two melodies were sung simultaneously.
Orthogonal rotation	Factor rotation that maintains the 90-degree relationship between factor axes.
P set or P sample	Research study participants.
Pentatonic scale	Musical scale with five notes of specific pitches in one octave of, for example the black keys on the piano make up the F sharp pentatonic scale.
Procedural knowledge	Knowing *how*.

Q sample or Q set	A miniature set of statements (47 in this study) that broadly and comprehensively represents all of the viewpoints expressed in the concourse.
Q sort	Participant input which involves ranking the Q sample of statements based on their opinion of the importance of each statement to teaching and learning improvisation.
Riff	A rhythmic (melodic) phrase that is usually repeated and forms an accompaniment or part of an accompaniment for a soloist.
Transcribing/ transcription	Listening to music and learning it by heart or writing it out on musical staff paper. Commonly undertaken by jazz musicians to "lift" other musician's recorded solos.
Varimax rotation	Factor rotation that maximizes the amount of study variance explained by each factor (i.e. their individuality).
Whole Tone Scale	Musical scale made up of whole tones which is 6 pitches in one octave.
Woodshedding	Practicing your technique (instrumental or vocal) usually on your own – the woodshed symbolizes the place where you would go to practice. This term intimates hard work like you would do in a woodshed.

Chapter 1.

Introduction

> *Improvisation enjoys the curious distinction of being both the most widely practiced of all musical activities and the least acknowledged and understood.* *(Bailey, 1993, p. ix)*

1.1. Research Context

The objective of this research was to identify methods, strategies, and concepts described by jazz musicians as being most effective for teaching and learning to improvise utilizing Q methodology, in order to support the synthesis of a constructive jazz improvisation pedagogical framework. The findings are the viewpoints of the participants included in this study, and the interpretation and assertions developed are based on these viewpoints.

It has been my experience as a jazz music student that learning to improvise is onerous, and although this is the ultimate attribute of a jazz musician, approaches to teaching improvisation are highly variable and often ambiguous with little agreement on the best way to go about it. Although many jazz musicians teach improvisation, and there are hundreds, if not thousands, of individual "methods" available for learning to improvise jazz, the effectiveness of these various pedagogies has not been established through research. In fact, until recently there has been very little research that investigates which teaching methods are most effective for learning to improvise, and some musicians feel that it is not even possible to "teach" improvisation (Hickey, 2009; Schroeder 2002). Jazz improvisation researcher Lissa May (2003) describes this situation as a disconnect between pedagogical tools for teaching and evidence that they work. Further, although most jazz improvisation teaching methods focus on music theory, the specific skill-set that is required for facility in improvisation is not generally

agreed upon or well understood. Many jazz musicians claim that improvisation is learned aurally from listening to and playing with other jazz musicians, not through training in music theory and notation (Azzara, 1999; Bailey, 1993; Berkowitz, 2009; Berliner, 1994; Biasutti & Frezza, 2006; Elliot, 1996; Green, 2008; LaPorta, 2000; May, 2003; Volz, 2005; Zimmerman, 2010). Thomas's (1970) music education research led him to the same conclusion:

> The practice of aural judgment and creative thought are basic behaviors of a musician. Programmed instruction in theory, for example, may produce high scores on tests dealing with data retention, but data retention by itself is not a musical behavior and is hardly a substitute for aural logic. (p. 56)

1.1.1. What is Jazz Improvisation?

> *Improvisation is the study of the direct relations between cerebral commands and muscular interpretations in order to express one's own musical feelings. Improvisation's function is to develop rapidity of decision and interpretation, effortless concentration, the immediate conception of plans and to set up direct communications between the soul that feels, the brain that imagines and coordinates, and the fingers, arms, hands and breath that interpret, thanks to the education of the nervous system which unites all the particular senses: hearing, seeing, feeling, touching and thinking in time, energy and space.*
>
> –Emile Jaques-Dalcroze, *1905*

Music improvisation has been defined as "the immediate, on-line invention of novel melodic, harmonic, and rhythmic musical elements within a relevant musical context.…that can apparently occur outside of conscious awareness and beyond volitional control" (Limb & Braun, 2008, pp.1, 3). The accomplished jazz improviser seems to know in advance what their improvisation will sound like, so in essence, it is "the manifestation of musical thought" (Azzara, 2002, p. 172). As a jazz musician wannabe, my ultimate goal is to be able to improvise with ease; to be able to create beautiful, engaging melodies and harmonies in the moment. But achieving this level of accomplishment is no easy task. Although jazz musicians make improvising look easy, and many take this virtuosic skill for granted, the real story is that it takes many years of focused work to learn how to do it, and some people give up because they find it is just too challenging.

Improvisation appears to spontaneously erupt from jazz musicians; a new composition and performance of it, all in the same instant. The word itself implies that this highly sophisticated artistic form is "without preparation and without consideration, a completely ad hoc activity, frivolous and inconsequential, lacking in design and method" (Bailey, 1993, p. xii). However, this could not be further from the truth; in his thesis, *Cognition in Improvisation*, neuroscientist Aaron Berkowitz (2009) avows that "musical improvisation is an exceptional feat of human cognition" (p. xviii).

The style of jazz that I aspire to could be considered *conventional jazz*, which is largely based on composed tunes. A structured framework underpins this style of improvisation, which Bailey (1993) describes as being "derived from the melody, scales and arpeggios associated with a harmonic sequence of a set length played in regular time" (p. 48). However, Bailey himself admits that "the essentials of improvisation have very little to do with mechanics so this type of description…gives absolutely no idea of how infinitely sophisticated this process can be" (p. 48). The jazz musician must attend to a myriad of things at once, they are experts at multitasking.

Jazz music educator David Schroeder (2002) describes the process of improvisation as "overlaying more experimental and non-traditional ideas on a 'skeleton' of traditional material" (p. 37); or more simply, as Berkowitz (2009) puts it, "spontaneous creativity within constraints" (p. 1). I think of improvising a solo on a tune as being akin to hanging decorations on a Christmas tree. In this metaphor, the underlying *skeleton* or *constraints* (the Christmas tree) is the time signature, the melody of the tune, the chord progression, and the style of the music; all of which the improviser must be intimately familiar with. The decorations are the improvisations, which rely on thematic development, harmonic and melodic understanding, technical aptitude, rhythmic feel, and emotional expression. The improviser is free to create, but only within the conscripts of the time signature, the harmonic structure, the rhythm, and the pitches that are available to them. The improviser must be intrinsically aware of the rhythm, which is the fundamental, ever-present heart-beat that propels the music forwards. The pitches available are conscribed by the musical instrument being played and the style of the music.

In his article “A Developmental Approach to Teaching Music Improvisation”, John Kratus (1996) describes improvisation as the making of “purposeful [non-random] sounds through time, with no intention of revision or replication” (p. 27). In Kratus’s assessment, an expert jazz improvisation is fluid, develops over time (has direction, a beginning, a middle where it usually climaxes, and an end), has enough structure to be meaningful (relates to the original tune and tells a story), and it uses typical styles and conventions of jazz music (p. 29). It is a balance between imitation and creation.

Another vital component that should not be overlooked in this description of jazz improvisation is the intention of the improviser. Jazz improvisation is a form of personal narrative that expresses the mood and emotions of the performer. This is represented in the individual style of each musician’s playing that gives their improvised solos a personal signature and makes their source identifiable. In his book that explores the nature and practice of improvisation, Bailey (1993) claims, “at its best, instrumental improvisation can attain the highest levels of personal musical expression” (p. 48). This may explain the intangible impact of improvising on the performers themselves, which might be described as a profound feeling of accomplishment and elation. In “Recognizing Improvisation”, Blum (1998) explains that an improviser is aware that “something unique is happening in their presence at the moment of performance” (p. 27). Some jazz improvisers describe this as an “out of body” or “flow” experience (Biasutti & Frezza, 2009; Csíkszentmihályi, 1990; P.J. Perry lecture at Vancouver Island University, Feb 5, 2014).

For this study, jazz improvisation is defined as a spontaneous performance of an original, meaningful, musical work that is not notated nor a memorized composition, and is recognizable as conventional jazz (in the style of American jazz from 1920 to 1960). In addition expert jazz improvisers are proficient on their instruments and have spent many years perfecting their artistic skill.

1.1.2. My Jazz Improvisation Education Experience

The way that I was taught to improvise jazz music could be likened to teaching someone to play tennis. The first step in the pedagogy is to memorize many basic skills.

In tennis the basic skills include stance positions, tennis strokes, timing, and making contact with the ball. In jazz, the basic skills that I was instructed to learn were scales, arpeggios, repeated patterns, licks, and standard jazz tunes (all memorized in 12 keys); and a solid time-feel. Each basic skill is practiced repeatedly for hours at a time so that it becomes an automatic function that does not require higher-level thought. Eventually after much repetition these skills become automated into engrams (motor programs), leaving the higher brain free to modify and adapt them to the current situation. Once this is achieved, the aim is that the learner will then be able to make the leap to putting these basic skills together contemporaneously and creatively. In tennis this happens within the structure of the game (score, lines, net, rules) and the immediate context (environmental conditions, opponent, partner). In jazz improvisation, it happens within the form of the piece of music (tune), the group you are playing with, and the audience.

This pedagogical model assumes that the basic patterns and skills are necessary components of the finished product, which emerge in new creative ways in each situation through very complex problem solving—one small step for a professional jazz musician, one giant leap for a jazz wannabe like me. Although this is the educational paradigm that I experienced as a learner, I can't say that it was the most effective route for me, and possibly for many other learners. As intimated, it has been a huge struggle for me to cross the chasm from proficiency with basic jazz skills and theory to accomplished jazz improviser. As this dissertation unfolds, other methods and approaches to teaching jazz improvisation and research into their efficacy will be discussed.

1.1.3. How Does One Teach Someone to Improvise Jazz Music?

How does one successfully teach a jazz wannabe like me to improvise jazz music? I have witnessed many musicians who are accomplished at reading and performing notated music try to learn to improvise. They spend time and money taking lessons, but find the task overwhelming, become completely frustrated, and ultimately give up. This might lead one to assume that they were unsuccessful because it is too difficult to learn. However, practical trials of teaching children and teens to improvise indicate this is not the case; there is evidence that all children can learn to improvise

novel music (Green, 2008; Kratus, 1996; Schafer, 1986; Sloboda, 1988). So maybe it is more to do with how it is being taught, instead of the difficulty of the task or the learner's inability. Which provokes the next question: How do you teach someone to invent and perform a creative activity that evolves in the moment; something that musicians just "play out of their heads" (Berliner, 1994, p.2)? Is it even possible to develop a standardized evidence-based curriculum and pedagogy for this artistic, creative expertise?

It is my estimation that the *ability* to teach someone to improvise jazz music is the holy grail of teaching jazz music, even for a professional jazz musician who is an expert improviser. According to Berliner (1994) who interviewed over 50 jazz musicians in order to understand their process, "it is not always apparent to fluent improvisers who have grown up in the jazz tradition what, precisely, naive learners need from them" (p. 10). In their chapter "How Experts Differ from Novices", Bransford, Brown, and Cocking (2000) explain that "though experts know their disciplines thoroughly, this does not guarantee that they are able to teach others" (p. 31). There is also the reverse scenario where a music teacher has a degree in education but is not a jazz musician, and in Clark Terry's words, "can explain to a student the square root of a B flat chord but can't play a blues chorus" (Freiman, 2007, para. 57).

My experience as a hopeful, dedicated, jazz music student has unfortunately included some completely unhelpful instruction, but also, propitiously, some very effective practical tips and concepts that significantly promoted my ability to improvise. But this is my individual experience; perhaps someone else might find the instruction that wasn't helpful to me beneficial, and vice versa. It seems likely that there needs to be several teaching strategies that would provide an instructor with enough options to be able to connect with all types of learners with various musical backgrounds.

I see three main conundrums in the field of jazz improvisation pedagogy that require investigation for clarification. Two are related to learning style and curricular approaches and the other is more to do with the phenomenon of jazz improvisation. With regard to efficacy of curricular approaches there is a conflict between a pedagogy that focuses on music theory and notation versus one that relies on aural learning. The

second issue is whether it is best to use a step-wise sequential approach, or an immersive "holistic" approach. These two conundrums represent four main orientations regarding how to teach and learn to improvise jazz music:

1. A pedagogy that focuses on music theory and notation – the *Analytical* camp
2. A pedagogy that focuses on aural learning – the *Listen to Learn* camp
3. A pedagogy that follows a step-wise sequential process – the *Building Block* camp
4. A holistic pedagogy that is immersive and multidimensional, not sequential – the *Just Play* camp.

The other conundrum is alluded to in Bailey's (1993) opening quote to this Chapter. Jazz improvisation is a balance between creation and imitation. It is challenging to teach someone to be creative, however imitation is much more straight forward. In jazz improvisation pedagogy, imitation is described as rote learning – mimicking the performance of someone else – and is a large part of the traditional way of learning to improvise. So let's add these two items to the list of orientations towards teaching and learning to improvise:

5. A pedagogy that focuses on rote imitation – the *Follow-the-Leader* camp
6. A pedagogy that focuses on creativity – the *Experiment, be Original* camp

Finally, it should be mentioned that these orientations are not mutually exclusive, there can be overlap in one person, but most jazz improvisation educators have a preference for one or two. The question is, which orientations are most effective?

1.2. Research Purpose Statement and Question

The intent of this research was to identify methods, strategies, and concepts that expert and novice jazz musicians have found to be effective for teaching and learning jazz improvisation, utilizing Q methodology, in order to support the synthesis of a constructive jazz improvisation pedagogical framework. This research was undertaken to answer the following question: What teaching approaches (components, elements, and strategies) do expert and novice jazz instrumental musicians find to be most

effective for learning to improvise jazz music? Instead of attempting to test the efficacy of individual jazz pedagogies, the people that are on the ground teaching and learning were asked about their personal experiences as a conduit to a personally meaningful understanding of what works, what doesn't, and why.

Q methodology was chosen because it is designed to explore the viewpoints of the participants. It is a blend of qualitative and quantitative methods that allows subjectivity to be studied through empirical methods – in this case the subjective viewpoints of jazz musicians regarding how best to teach and learn to improvise. One might perceive this as a phenomenological study since it explores the experiences of participants with the intent of finding commonalities in their perceptions, however instead of coding to identify emerging themes, Q factor analysis was used to identify patterns of participant responses (Saldana, 2011, p. 8). My rationale for using Q methodology is explained further in Chapter 3.

The following dissertation describes this research, and reports the findings from my perspective as a musician learning to play and improvise jazz music in the traditional style. The literature review has been divided into two chapters for convenience and clarity. Chapter 2 is a review of literature that speaks to the cognitive and physical processes involved in improvising jazz music, as well as the knowledge and skills required, which provides a foundational understanding that underpins the current study. Chapter 3 is a review of research that investigates jazz music improvisation teaching and learning, beginning with generally accepted concepts and then delving into areas of controversy. Chapter 4 explains the methodology for this study including my rationale for using Q methodology and the steps undertaken. The study findings are explained and interpreted in Chapter 5 including a comprehensive description of each of the viewpoints identified. Chapter 6 explains the conclusions that were drawn and identifies possible limitations of this research as well as ideas for future research stemming out of this study.

Chapter 2.

Literature Review – Jazz Improvisation

The literature reviewed in this chapter speaks to the cognitive and physical processes involved in improvising jazz music, as well as the knowledge and skills required. The intent of this literature review is to build a foundation of understanding to rest the current study on. Many of the statements that were used in this Q study were extracted from the literature reviewed here, and those statements are marked with two 8th notes (♫) to let the reader know which ones were included in the Q sample.

Bruno Nettl (1998) summarizes previous studies of music improvisation in his introduction to *In the Course of Performance: Studies in the World of Musical Improvisation*. Nettl's search for studies that looked into improvisation turned up a paucity of research, and he found very few that looked specifically at jazz improvisation. What Nettl did find was that prior to 1998, musicologists mainly focused on finished works, analyzing the components and history of composed music, but rarely delved into the creativity and improvisation that was involved in composing the music they investigated, or the improvisation that occurred when music was performed historically (p. 1).

To me this is completely understandable. Music was not recorded until the late 1800's when the first recording technology was invented, therefore the only way to examine music that existed prior to this date is via notated scores and written descriptions of historical music. For obvious reasons, it is not possible to listen to historical improvised music or discuss the process of improvisation with the composer and performer. In addition to this hurdle, if Nettl's (1998) summary of musicologists' conception of improvisation as "a process that cannot be explained, analyzed or described" (p. 12) is accurate, it is no wonder that improvisation had not been

investigated by many. In fact, Bailey (1993) states that "any attempt to describe improvisation must be in some respects a misrepresentation for there is something central to the spirit of voluntary improvisation which is opposed to the aims and contradicts the idea of documentation" (p. ix). Taking this notion even further, Maud Hickey (2009) wonders if it is even possible to teach improvisation. This strikes me as ironic since most musicians feel that improvisation is central to music as a whole, and therefore, without some understanding of improvisation it is not possible to fully understand music (Azzara, 1999, p. 21; Bailey, 1993, p. ix; Contemporary Music Project, 1966, p. 7; Thomas, 1970, p. 34).

Nettl's (1998) search for research into jazz music improvisation is now 16 years old, and the situation has changed in terms of the volume of studies available. In the intervening period, several researchers have looked into the phenomenon of jazz improvisation, and functional magnetic resonance imaging (fMRI) of the brain was developed. Research that describes the skills and competencies of accomplished jazz improvisers are summarized here, followed by a brief review of fMRI studies that looked at brain function during music improvisation.

2.1. What You Need to Know to Improvise Jazz Music

The ability to improvise appears to be made up of 3 main components – one is declarative factual knowledge (knowing *that* or knowing *about*), the second is comprised of skills and abilities that require procedural knowledge (knowing *how*), and the third is conditional knowledge which enables judging which skill and knowledge to use in a given setting (knowing *when and why*) (Berkowitz, 2009, p. 8-9; West, Farmer & Wolff, 1991, pp. 16-17).

2.1.1. Declarative Knowledge Base

2.1.1.1 *Ideas, Idioms, Motifs, Themes, Riffs and Licks*

There is a general consensus in the jazz music literature that improvisers use ideas, idioms or themes when they are improvising. Johnson-Laird (2002) explains:

“Creations cannot be constructed out of nothing. There must be existing elements to provide the raw materials for even highly original works of art” (p. 420). Paul Berliner (1994) states, "the improviser's evolving storehouse of knowledge includes musical elements and forms varied in detail and design: tunes, progressions, vocabulary patterns, and myriad features of style” (p. 146).

Jazz vocalist and music teacher Wendy Hargreaves’ (2012) analysis of jazz improvisation flies in the face of Bailey’s conception that jazz improvisation cannot be adequately explained (*see* p. 10). Personal experience and a review of the literature led Hargreaves to believe that the cognitive processes involved in improvisation, both conscious and subconscious, can indeed be described. Hargreaves explains that one integral process that jazz musicians employ when they are improvising is generating musical *ideas* (p. 354). In addition, Hargreaves proposes categorizing these musical ideas according to their source as being “strategy-generated, audiation-generated, or motor-generated” as elaborated below (p. 359).

Audiation-generated ideas are **“**unconsciously formulated but presented to the conscious mind in a manner that the brain mentally ‘hears’ and processes without the sound being present” before or at the same time as they are performed (Hargreaves, 2012, p. 360). These musical ideas often contain fragments of memorized patterns and amazingly they occur and are played in the correct key for the music that is being performed (p. 361). In other words, expert improvisers audiate ideas (hear them in their head) without conscious awareness of this process, in the correct pitch for what they are playing, and even though they might not be able to name the notes first, they can just play them (p. 361). This suggests that for an instrumentalist, the pitch of each note is somehow linked in the brain directly to the fingering required to play that note. This skill to pre-hear what you will play next is associated with high-level improvisers, many of who agree that the acquisition of this ability, although unintentional, results in a profound increase in improvisation proficiency (p. 361). Ruthsatz, Detterman, Griscom and Cirullo (2008) investigated factors that influence expert performance and also found that higher-level musicians had higher levels of audiation (p. 330).

As opposed to audiation-generated ideas, which are initiated without conscious awareness, in Hargreaves (2012) model, *strategy-generated ideas* are "consciously formulated and implemented with an intended [preconceived] design" (p. 359). Hargreaves explains that when an improviser is faced with a musical dilemma, they consciously choose a learned strategy to generate a solution, and these strategy-generated ideas might include memorized patterns/licks, repeated intervals, rhythmic displacement, chromaticism, sequencing, repetition with variation, or playing particular scales over given chords (pp. 359-360). These strategy-generated ideas are transferrable, so they can be played in any similar musical situation, and they don't involve audiation prior to use (p. 360). Because these ideas are consciously conceived out of memorized material, they are available to beginner improvisers who have enough knowledge-base to think through a formulaic process but have not developed audiation ability or the capacity to put together an improvised solo without conscious awareness (p. 360). In her chapter on cognition and musical improvisation, Hsieh (2012) explains that "in the early stages of learning to improvise, more simple processes through the application of short-term memory can produce acceptable improvisations of a more mechanical nature" (p. 150). Interestingly, improvised solos that are developed utilizing this type of strategy are often identifiable by the listener as originating from this source because they are less melodic and cohesive than audiation generated solos (Kratus, 1996, p. 29). In addition, strategy-generated ideas cannot be devised as rapidly as audiated ideas because they require conscious focus to construct, which reduces the amount of attention available for other activities such as listening to other players, and makes them unusable at fast tempos.

Hargreaves (2012) describes the third source of ideas for improvisation, *motor-generated ideas*, as actions of the body that unconsciously trigger musical output (p. 362). She offers several examples of jazz instrumentalists' descriptions of how at times their hands provide the ideas for improvisation that their minds have not conceived or audiated (p. 362). It is little wonder that improvisation seems mystical to the uninitiated. Jazz vocalists may also use this process of generating musical ideas through movement when they are scatting as displayed by Bobby McFerrin during his vocal improvisations, particularly in his version of the Beatles tune "Blackbird" which can be viewed on YouTube (Barber, 2009). According to Levitin and Tirovolas (2009), there is likely a

neuroanatomical and evolutionary explanation for this innate connection between music and movement (pp. 217-218).

In Hargreaves' (2012) experience the source category of an idea (strategy generated, audiation or motor generated) that an improviser accesses when improvising depends on the improviser's musical vehicle (instrumentalist vs. singer), in addition to improvisation ability. However, the categories may not be completely discrete and according to Hargreaves, "a synthesis of the sources" of ideas may occur in the later stages of improvisatory skill development (p. 365).

Similar to the concept of ideas, other researchers speak of *idioms* as being a basic component of jazz improvisation. Bailey (1993) classifies jazz improvisation as idiomatic since it is "mainly concerned with the expression of an idiom . . . and takes its identity and motivation from that idiom" (p. xi). Nettl (1998) calls ideas or idioms *a point of departure* or *model* that the improviser uses as a basis for their improvisation, and states that these models offer a paradigmatic method for improvisation research (p. 13). One common *point of departure* utilized in jazz improvisation is a *motif*, which is a short musical phrase that acts as a building block for improvisation (p. 15). Nettl explains that *motifs* are part of the *vocabulary* that the improviser draws on (p. 15). Some other examples include riffs, licks, and other virtuosic techniques that an improviser is handy with such as scales, arpeggios, patterns, and decorations. Elliot (1996) explains that improvising involves "generating, evaluating, selecting and remembering melodic patterns in the rapid passing of real time" (p. 11); that improvisation is developed from components of melodies and thematic materials.

More recently Martin Norgaard (2011) attempted to determine the thought processes of expert jazz musicians during improvisation, by using a phenomenological retrospective interview approach. Similar to the findings of previous researchers, Norgaard's participants described that they used intact motifs from a memorized idea bank in their improvisations; adapting them appropriately for a given musical context, and reusing them throughout their solos (p. 121). This method is consistent with the strategy-generated ideas that Hargreaves (2012) speaks of (p. 359).

Whitmire (2013) used “stimulated recall” to uncover the strategies that artist-level jazz musicians employ when they improvise. Whitmire videoed jazz musicians improvising and then asked them to watch their own video and classify the musical concepts they used in their solos. The improvisers in this study felt they mostly used a variety of preconceived musical ideas and techniques such as memorized licks, sequence, and phrasing, however much of the musical content was also derived from knowledge and application of jazz music theory such as scale-chord relationships (p. ii).

2.1.1.2 Tune Repertoire

Azzara (1999) believes that developing a large repertoire of tunes by ear is “extremely helpful for individuals trying to improvise their own melodies, rhythms, and harmonies” (p. 22). In Johnson-Laird’s (2002) estimation, the professional jazz musician has hundreds if not thousands of tunes in their memorized repertoire; and for each one they know the melody and chord progression by heart (p. 439). Additionally, in order to become comfortable with all the genres that jazz music encompasses, Azzara recommends that the tunes learned should represent a variety of styles (jazz standards, blues tunes, Latin music, folk songs), tonalities (major, minor, pentatonic, whole tone, modal) and meters (duple, triple, compound and odd) (p. 22). To this list I would add various tempos and rhythmic feels (funk, swing, bebop). It is common practice amongst professional jazz musicians to have every tune in their repertoire memorized in all 12 keys so they are comfortable playing in any key. This allows flexibility to play with any instrument and in any vocal range, in addition to being able to express their thoughts spontaneously and personally, without hesitation about the correct notes to include in any key.

Azzara (1999) believes that this memorized repertoire is fundamental to improvisation because in addition to promoting an understanding of how to develop a melodic line, it enables a firm grasp of harmonic progressions in jazz music (p. 22). Interestingly, there is evidence from novice/expert studies that recall ability increases with skill ability, which might explain the phenomenon of improved memorization capability that comes with expertise (Schunn & Nelson, 2009, p. 399). For example, the more tunes a jazz musician has in their memory bank, the easier it is for them to memorize additional tunes (Berliner, 1994, p. 110).

2.1.2. Skills and Abilities - Procedural Knowledge

2.1.2.1 Competency on Your Musical Instrument

A prerequisite that will not be explored here is: an accomplished improviser of jazz music has very advanced technical ability on their instrument that takes many years to achieve. However, one competency that is specific to jazz should be mentioned and that is the ability to play continuous strings of eight notes at fast tempos. This is considered a fundamental ability for the improviser because jazz improvisation often includes running eighth notes, particularly bebop (Coker, 1975, p. 56).

2.1.2.2 Audiation

Only play what you hear. If you don't hear anything don't play anything.

--Chick Corea

Edwin Gordon (2012) coined the term *audiation* as a descriptor for the ability to hear in your head what you are about to perform, or put another way, the ability to perform what you hear in your head. Audiation "is the cognitive process by which the brain gives meaning to musical sounds" (Gordon, n.d., para. 2). Audiation is something that expert improvisers can do, and they describe it as the ability to hear and vocalize simultaneously what they are playing, in addition to understanding the relevance of each note in terms of the overall context of the music (Azzara, 2002; Halberstadt, 2001; Hargreaves, 2012; Kratus, 1996; Volz, 2005). It appears that audiation may not be explicitly taught; instead it seems to evolve out of learning music to a very high level.

2.1.2.3 Time and Rhythmic Feel

The professional jazz musician has an ingrained sense of time. Berliner (1994) feels that "the most fundamental approach to improvisation emphasizes rhythm, commonly known in the jazz community as time or time-feel" (p. 21). In addition to automatically keeping strict time, they can play in many different time signatures and rhythmic styles such as swing or Latin, and have the capacity to switch easily between them.

> Musicians may learn the principles for improvising rhythmic phrases in three distinct systems: a set of prototypes, a set of principles for realizing them in various ways, and a system for timing the notes in a way that swings. Yet, the end result is probably a single set of unconscious procedures…that requires no working memory for immediate results. (Johnson-Laird, 2002, p. 436).

Many jazz music teachers express that enabling a learner to "swing", or internalize that rhythmic feel, is one of the most difficult tasks, particularly for learners who have previous training in a different genre of music such as classical.

2.1.2.4 Listening and Communicating

Jazz improvisation is interactive, the musicians are constantly sending, receiving, and responding to information, similar to having a conversation, but this one is in the language of jazz. The musical interaction that occurs in group playing is fundamental to improvisation; improvisers must have keen listening skills that allow them to respond to other players' musical ideas. However communication is not just taking place between the musicians, it also occurs with the audience – perhaps what Kingscott and Durrant (2010) describe as the "all-important dynamic [of] musical flow between audience and musician" (p. 140). "The artistic meaning of improvisation appears…related to the ability of communicating affective states to the audience" (Biasutti & Frezza, 2006, p. 1465). Biasutti & Frezza underscore that "music is a language to express affective states, and music improvisation is a way to communicate through this language" (p. 1466). And there seems to be something unique about the communication that occurs during jazz music performance. Ingrid Monson (1996) researched the social and musical interactions that occur during jazz improvisation and discovered that the collaborative and communicative aspects of improvisation have no "analogs in the Western classical music tradition" (p. 4).

2.1.2.5 Risk Taking

Performing music in front of an audience requires a certain confidence in your own ability. Improvising jazz in front of an audience not only requires self confidence in your ability, it also imbues an enjoyment of living on the edge and taking risks; which is perhaps creative genius, the need to test and stretch or expand your own ability in performance, and the exhilaration of achievement. Schroeder (2002) explains that

"freedom is weighed against structure,…[the improviser] plays against an existing form by exploring and taking risks within its boundaries, giving shape to improvisation while grounding it within specific points of reference" (p. 37).

2.1.3. Putting it Together Creatively - Conditional Knowledge

2.1.3.1 Understanding of the Jazz Style

Saxophonist Jerry Coker (1975) feels that an understanding of the jazz style is essential for creating jazz music (p. 22). This understanding could be considered the improviser's conditional knowledge – successfully judging when and why to use their declarative knowledge (the building blocks for soloing such as memorized motifs, riffs, licks, and patterns), and their procedural knowledge (technical skills). Berkowitz (2009) explains, "The ability to improvise in a style relies on an intimate knowledge of the musical elements, processes, and forms of that style", all of which has been internalized completely, both mentally and physically, allowing spontaneous fluency, and becomes a sort of "code of conduct" (p. xi).

There is definitely a code of conduct for jazz music in general and specifically for improvisation. For example, when jazz musicians play together in a combo, all members know the rules and conventions, including who should play what and when. The specifics are so well understood that there is often no verbal communication required to coordinate the performance of a tune, just eye contact or a nod. According to Johnson-Laird (2002):

> Creativity satisfies pre-existing constraints or criteria. Musicians create…improvisation.…within the constraints of a *genre* and *their own personal style*. Their style may develop or change.…Even when a new genre is created, it too lies within the bounds of criteria….It has constraints. The society of musicians crystallized these constraints, which themselves were the consequences of previous creative processes. (p. 419)

The individual creator is not a closed system, but is influenced by history, culture and the musical style or genre of their creation. "The aesthetic values of a culture thereby exert an historical influence on the individual's creative processes, which, in turn, may contribute to the values that are passed on to the next generation" (Johnson-

Laird, 2002, p. 420). An example of this type of constraint for the jazz improviser is the structure of the music itself. A thorough understanding of jazz harmony and harmonic progressions (chord changes), as well as how melodies relate to underlying chords, is a must given the fundamental role that harmony and melody play in jazz music.

2.1.3.2 Overall Plan

As intimated in the previous section, one view of jazz improvisation is that musicians string together a sequence of motifs or licks that are modified to meet the constraints of the chord sequence and the key of the tune. Ulrich (1977) explains, "Sequences of motifs are woven together to form a melody. Rather than constantly inventing new motifs, the musician modifies old ones to fit new harmonic situations" (p. 870). There are plenty of jazz improvisation method books that contain hundreds of licks for neophytes to memorize, a process that is intended to help them learn to improvise. Yet, the motif theory for putting together a jazz solo cannot be the whole story; someone had to invent the motifs in the first place. It is true that jazz musicians often reuse certain phrases, rhythmic patterns, and melodic contours, but they also play many phrases that are novel. In addition, the task of constructing complete solos out of memorized motifs is impracticable. Johnson-Laird (2002) feels that it is much easier for experienced musicians to make up new melodies (p. 430).

Johnson-Laird (2002) also believes that improvisation is more complex than just stringing together a bunch of memorized motifs, and his algorithm for improvisation includes criteria or constraints that he calls rules instead of lists of memorized fragments (pp. 439-440). Similarly, Schroeder (2002) explains that accomplished improvisers "amalgamate patterns grounded in traditional tonal harmonic approaches with contemporary melodic and rhythmic ideas, overlaying more experimental and non-traditional ideas on a 'skeleton' of traditional material" (p. 37).

Biasutti and Frezza (2006) interviewed professional improvising/teaching jazz musicians to explore their ideas regarding improvisation and the general consensus was that good improvisers have not only mastered the skills required to improvise, they are also able to use those skills creatively and spontaneously; they are able to create meaningful melodies on the fly (p. 1465). Azzara (1999) agrees, "Improvisers know

many tunes…by ear, understand harmonic progressions, and have the musical thoughts necessary to make up their own melodies, rhythms, and harmonies" (p. 24). They:

- establish motivic development through tonal and rhythmic sequences
- demonstrate effective use of silence
- show a sense of style
- indicate an understanding of tension and release through resolution of notes and rhythmic variety
- embellish notes and perform variations of themes. (Azzara, 1999, p. 23)

In addition, the experienced improviser has an overall plan for each solo they play, which they adapt as the solo unfolds according to what happens in the moment (the context).

2.2. Brain Function During Jazz Improvisation

> *Improvisation is a creative musical act requiring immediate musical judgment. Often these musical judgments are very complex, demanding instant analysis, evaluation and projected thought. In improvisation one must not only be musically perceptive, he must also be able to anticipate musical thought.* (Thomas, 1970, p. 34)

2.2.1. Non-conscious Art

> *Extemporizing possesses this singular and puzzling property – that reflection and attention are of scarcely any service in the matter.*
>
> –Carl Czerny, *1839*

Jazz improvisation is generally considered to be a subconscious or attention independent act (Badgaiyan, 2012, p. 584). Johnson-Laird (2002) argues that advanced improvisers have in their heads a set of subconscious principles that control melodic improvisation (p. 439). Norgaard (2011) describes this as having internalized rules that dictate individual note choices so completely that these choices are made implicitly, outside of consciousness, and enable real-time improvisation because these choices must be made too rapidly to be controlled consciously (p. 111). In other words, "the

performer is played by the music" (Pressing, 1988, p. 139). Fidlon's (2011) research into the cognitive processes of jazz improvisers illustrated:

> The extent to which expert jazz musicians acquire and refine procedures for generating well-formed musical ideas at a minimal cognitive cost. The efficiency of the improvisational process was evidenced by the limited demands that generating novel music placed on the skilled improvisers' attention. (p. vi)

Even jazz musicians themselves recognize this phenomenon as evidenced by the musicians that Biasutti and Frezza (2006) interviewed who described improvisation as "an unconscious and automatic activity" (p. 1465). Jazz saxophonist Ronnie Scott described the non-conscious nature of improvising, "as if something else has taken over and you're just an intermediary between whatever else and the instrument" (as quoted in Bailey, 1993, p. 52).

Expert-Novice studies indicate that "experts don't know the things they know and do, and have a hard time expressing it" (Schunn & Nelson, 2009, p. 399). This appears to be particularly true for expert jazz musicians, and is not surprising given the supposed subconscious nature of improvisation. The musicians that Paul Berliner (1994) interviewed were in general unable to describe what they are thinking when they improvise, or what the internal process is. Similarly, the musicians in Bailey's (1993) study "chose to discuss improvisation mainly in 'abstract' terms. In fact there was a commonly held suspicion that a close technical approach was, for this subject, uninformative. In general, intuitive descriptions of experiences were preferred" (p. xi). For example, Ronnie Scott explained his ability to improvise as arising from a combination of "experience" and what he called "that conjunction of sounds which is pleasing to one's ear" (as quoted in Bailey, 1993, p. 51).

Neuroscientist Aaron Berkowitz's (2009) research into the improvising mind led him to the conclusion that "improvisation involves many aspects that appear to be inaccessible to consciousness, at least in the moment of improvising" (p. xvii), which helps to explain why jazz improvisers are unable to express how they do it. According to Berkowitz, the improviser has "brains in the fingers…that respond to the demands of the ear and the moment" (p. 37).

In Nettl's (1998) introduction to *In the Course of Performance: Studies in the World of Musical Improvisation*, he asks, "what is it that actually happens in the mind of the improviser in the course of a performance?" and continues, "this may be the most significant question for scholars investigating the process" (p. 16). Undoubtedly true, but I would add that the answer to this question is also paramount for improvisation educators because the answer could significantly inform their teaching practice. The quest to understand mental processes promoted the development of technology to image the brain while performing functional tasks, i.e. functional magnetic resonance imaging (fMRI).

2.2.2. fMRI Studies of Improvisation

Although fMRI is not the focus of this study, it is an emerging field of research that has relevance to learning to improvise jazz music. Therefore, the few fMRI studies that have looked at brain function in jazz improvisers are discussed here to reveal any concepts regarding brain function that might inform teaching jazz improvisation.

In an attempt to better understand the neurophysiological processes that underlie spontaneous artistic creativity, Limb and Braun (2008) undertook an fMRI study of six professional jazz piano players to compare brain function while improvising music, with brain function while playing a memorized composition. Limb and Braun found that spontaneous jazz improvisation was associated with consistent, distinctive patterns of activation and deactivation in certain parts of the brain – specifically, the "prefrontal cortex, sensorimotor, and limbic regions" (p. 3). Essentially, some parts of the brain were switched off and others were switched on during spontaneous improvisation – "widespread deactivation of lateral portions of the prefrontal cortex [DLPFC] together with focal activation of the medial pre-frontal cortex" – and the regions of activation and deactivation were reversed during memorized performance (p. 3). In other words, the regions of the brain that were *activated* during improvisation, were *deactivated* during memorized performance, and vice versa. These findings provide "insight into cognitive dissociations that may be intrinsic to the creative process: the innovative, internally motivated production of novel material…that can occur outside of conscious awareness and beyond volitional control" (p. 3).

The part of the medial prefrontal cortex that is *activated* during improvisation, Brodmann Area 10, is also associated with the production of autobiographical narrative (Limb & Braun, 2008, p. 3). These researchers argue that this corroborates the concept of improvisation as a way of expressing one's own musical voice or story (p. 4). The precise function of Brodmann Area 10 is not well understood; it is thought to act as a broad-based integrative area that combines multiple cognitive operations in the pursuit of higher behavioural goals, similar to what is commonly known as multitasking (p. 4). Limb and Braun describe this integration as "adopting and utilizing rule sets that guide ongoing behaviour and maintaining an overriding set of intentions while executing a series of diverse behavioural subroutines", which pretty much describes improvising (p. 4). There is a prescriptive framework of rules or constraints which the improviser conforms to, the tune (chord changes, melody, form), the time signature, as well as the rhythm and style chosen; and yet still creates spontaneously (overriding intention).

One of the brain regions that is *deactivated* during improvisation (the LOFC of the prefrontal lobe) is "thought to provide a cognitive framework within which goal-directed behaviours are consciously monitored, evaluated and corrected" (Limb & Braun, 2008, p. 4). This deactivated region is believed to be involved in assessing behaviours in terms of social demands/context and inhibiting performance that is inappropriate or maladaptive (p. 4). The other part of the prefrontal cortex that is *deactivated* during improvisation (the DLPFC) is considered to coordinate "planning, stepwise implementation, and ongoing adjustment of behavioral sequences that require retention of preceding steps in working memory…[this area] is active during effortful problem-solving, conscious self-monitoring and focused attention" (p. 4). Limb and Braun feel that this "deactivation may be associated with defocused, free-floating attention that permits spontaneous unplanned associations, and sudden insights or realizations" which also pretty much describes the process of jazz improvisation (p. 4). Limb and Braun explain that the "dissociated pattern of prefrontal activity they observed" is consistent with "the idea that spontaneous composition relies on intuition, the ability to arrive at a solution without reasoning" (p. 4).

Beckstead (2013) interprets the findings from Limb and Braun's fMRI study in the following way:

> The portions of the prefrontal cortex activated during overlearned playing (and deactivated during improvisation) are associated with more typical, school-like cognitive processing such as planning, stepwise implementation of tasks, and effortful problem solving. In short it appears that we access the region of the brain associated with sequence, planning, and problem solving, when we play memorized or read passages. During improvisation, we deactivate this region and switch to cognitive processing associated with meditation, daydreaming, and complex, long-term multitasking. (p. 70)

Beckstead explains that the results of Limb and Braun's study "make a clear, cognitive distinction between playing learned music and improvising….Improvisation is a much more creative endeavor" than playing learned music (p. 71).

Levitin and Tirovolas's (2009) review of current advances in the cognitive neuroscience of music discusses Limb and Braun's results, and explains that the patterns of activation and deactivation observed suggest that "conscious thought and volition needed to be suppressed" in order to improvise, which "conforms to subjective reports by musicians that improvisation relies on sub- or preconscious processes that are outside the domain of conscious control and awareness" (p. 225). Levitin & Tirovolas summarize that "the lack of conscious control [during improvisation] represents overlearned and automatic processes characteristic of professional improvisers" (p. 225). Bransford, Brown and Cocking (2000) express that experts' "ability to retrieve information effortlessly is extremely important because fluency places fewer demands on conscious attention which is limited in capacity" (p. 49).

Bringing this discussion back to jazz improvisation teaching and learning, Limb and Braun's (2008) findings imply that if you want to improvise jazz music you need to be able to turn off your DLPFC and the LOFC, and activate Brodmann Area 10. This is not just learning scales, arpeggios and licks. The sixty-four million dollar question is "how do you train the brain to do this?"

At this point in time, brain imaging is well ahead of our interpretive capacity, and we don't have a good understanding of what it all means yet. Hopefully this vast amount of new neuroscientific information will eventually be translated into a comprehensive explanation of how the brain learns higher level, creative skills, so that educators can put

this information to use. However, a word of caution is warranted here. Educators, university administrators, and politicians including school boards, as well as parents, are very interested in the latest scientifically proven strategies for teaching and learning, and the neuroscience field is particularly enticing. Editorials are frequently published in newspapers and magazines extolling what the latest brain research means for teaching and learning. However, the science is not at the point where causal links can be made between brain function, learning, and education (Gruhn & Rauscher, 2008, p. 267). And there are obvious risks associated with attempting to do so. That being said, there are some general concepts that have been interpreted from neurobiology, which could inform music education, such as the importance of repetition, auditory learning, and complementary holistic experiences that impact more than one sense (p. 272). Another finding that is extremely relevant to music education is that the teaching method used has an impact on how the brain processes music and the way it learns (pp. 274-275).

2.3. Chapter Summary

This chapter summarized what is known about the cognitive and physical processes involved in improvising jazz music, as well as the knowledge and skills that an accomplished jazz improviser possesses. The next chapter builds on this foundational information with a review of research that investigates jazz music improvisation teaching and learning.

Chapter 3.

Literature Review - Jazz Improvisation Education

> *When you're just learning jazz, everything is mystical….For prospective [jazz] musicians unraveling the mystery is essential.* (Berliner, 1994, p. 2)

This chapter reviews literature that discusses jazz improvisation teaching and learning. As mentioned in the introduction (Chapter 1), it is my estimation that the *ability* to teach someone to improvise is the holy grail of teaching jazz music. Learning to improvise jazz is challenging, and there isn't agreement on which approaches are best for teaching someone this skill. My intention for doing this study was to attempt to resolve this discussion, not through a comparison of methods, but rather by asking musicians to review statements about teaching and learning jazz improvisation in order to discover what worked best for them and what didn't – i.e., what methods propelled them forward with their ability to improvise and vice versa. Many of the statements that were used in this study were extracted from the literature reviewed here, and those statements are marked with two eighth notes (♫) in this review to let the reader know which ones were included in the Q analysis.

It should be mentioned that there is very little peer-reviewed research in this area, and that might explain why the field of jazz improvisation education is fraught with controversy. I begin this review with generally accepted concepts and then delve into areas of controversy, in particular the three conundrums regarding approaches to jazz improvisation education that were mentioned in Chapter 1 – aural versus music theory and notation, sequential versus immersive "holistic", and creative versus imitative. But before entering into that exchange, I will first consider the literature that addresses two essential questions that recurrently surface in the research, and in discussions with jazz musicians and educators; namely, can improvisation be taught, and does it require natural ability?

3.1. Can Jazz Improvisation be Taught?

> *The question remains: is improvisation a teachable craft skill or an elusive phenomenon?* (Kingscott & Durrant, 2010, p. 139)

One would think it would be an easy process to take the comprehensive list of knowledge and skills required to be able to improvise that was outlined in Chapter 2, and develop an effective teaching method based on that information. However, given the complexity of the act of improvisation and our very preliminary understanding of the processes involved, it is not as obvious at it might seem. In addition, improvisation is a subconscious creative process that requires active problem solving in an evolving environment; therefore learning how to do it is not just accumulating declarative and procedural knowledge, it also involves conditional knowledge. It is no surprise that many people, including professional jazz musicians, wonder if improvisation can be taught at all.

The subconscious nature of improvisation gives it a mystique, and makes it hard to pin down the skills and strategies that need to be learned to acquire this ability. Neuroscientist Aaron Berkowitz (2009) spent several years researching music improvisation in an attempt to discover the cognitive processes involved. Berkowitz believes that the conscious manifestations of the unconscious knowledge and processes involved in musical improvisation can be studied in order to develop a pedagogy for learning to improvise (p. xvii). According to Berkowitz, these processes can be uncovered through the study of improvisers and their improvisations (p. xvii).

Several doctoral studies have looked at the effectiveness of instruction in improvisation in middle school students (grades six to eight), and while the genre investigated was not limited to jazz, all found that instruction in improvisation does indeed improve improvisation ability (Bash, 1983; Davison, 2006; Partchey, 1973; Wig, 1980). Hart (2011) found similar results in his investigation of the influence of a 14-week program of jazz improvisation instruction for undergraduate music education students who were non-jazz majors and had very little or no prior exposure to, and no formal instruction in, jazz improvisation (p. 46). For this study, Hart used an introductory jazz education curriculum that included learning repertoire by ear (p. 62). Hart concluded that

although achievement varied, instruction in improvisation resulted in the ability to engage in meaningful improvisation for the eight participants in his study (p. 67).

In her article about factors that influence success in jazz improvisation, Lissa May (2003) lists several studies that indicate improvisational achievement improves with instruction, although she also mentions that little is known about the comparative effectiveness of various instructional techniques (p. 246). Watson's (2010) research into methods for teaching improvisation found a significant effect for instruction on jazz improvisation achievement, which led him to conclude that "the ability to improvise…is a skill that can be developed through training" (p. 250). The musicians that Biasutti and Frezza (2006) interviewed all agreed that it is possible to teach improvisation, but also felt it is not possible to teach someone to be a good improviser (p. 1466). One naturally wonders if this is an instructor or learner issue.

In summary, research indicates that the ability to improvise jazz music can be fostered through instruction. The next question commonly asked is whether or not natural talent makes a difference to one's ability to learn to improvise.

3.2. Does Natural Ability Matter?

> *There is a relatively widespread conception that if individuals are innately talented, they can easily and rapidly achieve an exceptional level of performance.*
>
> (Ericsson, Krampe, & Tesch-Römer, 1993, p. 366)

The concept of musical giftedness or natural talent has a long and disputed history. Benjamin Bloom's (1985) research into the development of talent in children, which included 24 concert pianists, found striking similarities in the underlying processes of talent development in several domains. Specifically, "a long and intensive process of encouragement, nurturance, education, and training…[is required] to attain extreme levels of capability" *regardless* of initial characteristics, gifts or innate aptitudes (p. 3). Bloom also oversaw 40 years of research on school learning which led him to one major conclusion: "what any person in the world can learn, *almost* all persons can learn *if* provided with appropriate prior and current conditions of learning" (p. 4). Bloom

discovered that “the middle 95% of school students become very similar in terms of their measured achievement, learning ability, rate of learning, and motivation for further learning when provided with *favorable learning conditions*” (p. 4). However, he also found that “there are one or two percent of individuals who appear to learn in such unusually capable ways that they *may* be exceptions to the theory” (p. 4).

More recently, Pressing (1998) expressed a similar opinion in his discussion of the psychological constraints on improvisation. According to Pressing “the innate talent view has been undermined by a range of studies by psychologists” (p. 48). Pressing continues, “substantial evidence now exists that it is primarily intensive practice of the right kind (‘deliberate practice’) that is linked with expert status” (p. 48). Daniel Coyle (2010) sings a similar tune in *The Talent Code*. Coyle believes that talent is not innate; instead it is grown as a result of “certain patterns of targeted practice” that accelerate learning (p. 46). Pressing notes that, “the source of expertise might well be sought in the factors that predispose individuals towards such intensive practice”, rather than innate talent (p. 48). Azzara’s (2002) summary of jazz improvisation research recognizes a common theme that improvisation skill acquisition is developmental in nature, and all students have some potential to improvise (p. 182). Jazz musician and educator Jerry Coker (1975) concurs, “any really good musician – particularly jazz musician – is made, not born” (p. 22).

These impressions are in stark contrast to the conclusions that Ruthsatz, Detterman, Griscom and Cirullo (2008) made based on their research that explored the effects of environmental factors and innate talent on the acquisition of expertise in the musical domain. Ruthsatz et al. found that “higher-level musicians report significantly higher mean levels on innate characteristics such as general intelligence and music audiation, in addition to higher levels of accumulated practice time” (p. 330). However, there appears to be some logic issues associated with this conclusion because audiation is generally described as a skill that is developed, not an innate trait. Instead of innate talent, the higher levels of accumulated practice might explain the difference in audiation ability and musician expertise described in this study.

Interestingly though, many jazz musicians believe there is some innate tendency for improvisation, as discovered by Wilson and MacDonald (2012) in their research into musical identities. The jazz musicians interviewed used two distinct metaphors to characterize what they play (*mastery* and *mystery)*, which Wilson and MacDonald refer to as repertoires:

> According to 'mastery', improvisation is understood and controlled through mastery of skills and knowledge; according to 'mystery', improvisation is instinctive and uncontrolled, arising from unfathomable inspiration. These repertoires have distinct implications for identity: mastery emphasizes achievement and authority, but suggests that anyone can improvise given time, while mystery implies innate exclusivity of improvisers, but accords them less authority in their practice. (p. 561)

Gordon's (2012) 30-plus years of teaching music to elementary, secondary, and college students led him to conclude that "music aptitude is a product of innate potential *and* informal and formal environmental influences" (p. xiv). Hassler and Miller's (2008) research on musical giftedness does not support the concept of natural music aptitude. Hassler and Miller found that the skills of highly gifted musicians, such as absolute pitch and sensitivity to melody and harmony, "represent the expression and enhancement of tendencies that are inherent, at varying levels of prominence, in normative musical development" (pp. 218-219). In other words, Hassler and Miller feel that these tendencies exist in all people and the emergence of musical exceptionality occurs in response to a set of conditions or factors, not because of "a core musical faculty" (p. 223).

In summary, the experience of these musicians and educators suggests that proclivity might influence the ability to learn to improvise jazz music, but hard work and constructive tutoring also play a role. And this leads directly into my next discussion of best methods for teaching and learning to improvise, beginning with the importance of dedicated practice.

3.3. What Works and What Doesn't for Teaching and Learning Jazz Improvisation?

> *Learning to improvise in jazz is one of the most difficult endeavors ever attempted by mankind. The whole person is involved when studying jazz –the mind, memory, ears, body, heart, and spirit!*
>
> (Coker, 2008, p.11)

This section is devoted to a discussion of literature that investigates the content of jazz improvisation education, beginning with the most agreed upon, and moving to the most controversial including the three conundrums mentioned in the Chapter 1 – aural versus music theory and notation, sequential versus immersive "holistic", and creativity versus imitation. As mentioned earlier, there is a dearth of published research that investigates how best to teach and learn jazz music improvisation. However, there are a surprising number of unpublished academic theses that have researched this topic. The findings of these theses will be discussed, but the myriad of methods for learning to improvise jazz music will not be delved into in depth. Both the Simon Fraser University and Vancouver Island University library search engines were used to find relevant research. The terms I used for locating this material were: teaching jazz music improvisation, jazz music improvisation education, jazz music pedagogy, and learning to improvise jazz music.

3.3.1. Established Jazz Improvisation Education Concepts

3.3.1.1 10,000 Hours - Endless Practice and Woodshedding to Develop "Chops"

> *Since music learning goes far beyond mere memorization, persistent acquisition of skills and knowledge is supported by long-term procedures of acting and practicing.* (Gruhn & Rauscher, 2008, p. 276)

> *The popular conception of improvisation as "performance without previous preparation" is fundamentally misleading. There is, in fact, a lifetime of preparation and knowledge behind every idea that an improviser performs.* (Berliner, 1994, p. 17)

The notion that it takes 10,000 hours (or 10 years) of practice to reach expertise gained a lot of momentum in the 2000's, but the research that led to this conception was specific to expert violinists and chess players, therefore the exact timeframe may not be applicable to other art/craft-skills such as jazz improvisation (Schunn & Nelson, 2009). However, there does seem to be agreement amongst educators and researchers that learning a complex skill to a highly accomplished level takes a major investment of time (Bransford, Brown & Cocking, 2000, p. 58; Ericsson et al., 1993). In addition the type of practice required to reach expertise must be *deliberate* and *relevant,* and this does seem to apply to reaching expertise in any field/domain (Ericsson et al., p. 400; Pressing, 1988, p. 48).

The musicians that Biasutti and Frezza's (2006) interviewed agreed that to become an accomplished jazz improviser, one has to practice systematically to refine and master techniques, to the point where they become automatic (p. 1465). Berkowitz's (2009) research led him to the same conclusion – the ability to improvise in a given musical style relies on an intimate knowledge of the musical elements, processes, and forms of that style, all of which are internalized mentally and physically (p. xv). These concepts fit with Levitin and Tirovolas's (2009) description of the over-learned [memorized] and automatic processes that professional jazz improvisers use (p. 225).

Pressing (1988) explains that "highly expert performance typically reflects extreme adaptations, achieved through decades of effort, to a quite specific constellation of task requirements" (p. 50). The outcome of this type of practice is "the development and refinement of domain-specific skills and knowledge structures, and progressive physiological and cognitive adaptations" (p. 50). These physiological changes in the nervous and musculoskeletal systems require repetitive practice and occur slowly (Pressing, 1998, p. 131).

Clark Terry's life-long journey as a jazz trumpeter led him to similar conclusions through practical experience – one of Terry's steps for learning to improvise is *Assimilation* which requires hours of dedicated, repetitive practice (Eric, 2011). So it

appears that there is no getting around the long-term dedicated practice regime that is required to become a virtuosic jazz musician and improviser.

3.3.1.2 Self-directed Learning

Fifty years ago, the Manhattanville Music Curriculum Program, known as MMCP, was commenced at several locations in the United States to study unique and experimental practices in music education. Early in the MMCP the researchers exposed a *disconnect* between the intentions of music education and students' learning experience. Thomas (1970) explains:

> Students did not hear what we presumed they heard, did not necessarily understand ideas which they parroted back to teachers, did not link information to construct larger thoughts in the way we believed they did, and did not care about many of the skills demanded of them. On the contrary, it was clear that they heard things and were extremely sensitive to musical factors which the teacher sometimes completely overlooked or summarily dismissed in an attempt to make their own point. (p. 2)

Clearly, this description of unengaged, teacher-focused classrooms completely missed the mark for the learners, and was potentially detrimental to their musicality.

Bloom's (1985) research into developing talent in young people found that advanced learners took responsibility for their own development. They "became more independent in their lessons", "teachers became coaches" rather than directors, and students "began to identify and develop personal musical styles with the encouragement of a master teacher" (p. 66).

In *Creative Music Education* Murray Schafer (1986) describes his experiences teaching music and explains that it was much more effective to provide scenarios where students did their own problem solving, rather than lecturing to them. Similarly, music educator Brian Zimmerman (2010) has realized that it is more propitious to allow students to find their own answers rather than telling or instructing them (p. 47).

Biasutti and Frezza's (2006) interviewees felt that the processes for learning improvisation were up to the student, but they should involve listening to a large variety of improvisers and musical genres (p. 1466). In their words, when "teaching

improvisation, most of the work is up to the students themselves, because they have to develop their personal improvisational style, giving their own personal significance to the performance" (p. 1467). Similarly, jazz saxophonist Joe Lovano says, "No, I can't teach people to improvise, but I can teach them how to teach themselves" (as quoted in Schroeder, 2002, p. 37). Lovano recommends that the learner be provided with the tools to learn, and the tools chosen may depend on the learner's preferred style of learning and what they already know (Schroeder, p. 37). Jerry Coker (1975) observed that music students prefer to learn musical tools through self-study, such as learning to transcribe the music of recorded artists, which he believes is vital for developing an understanding of the jazz style (p. x & 22). Elliot (1996) agrees that a key strategy for teaching improvisation is to provide students with tools that they can use for learning to improvise, and acquiring the prerequisite "creative disposition" (p. 11).

In essence what these music educators are intimating is that jazz improvisation is not explicitly taught as a skill. Instead, it is implicitly learned and developed by the student through incorporating their knowledge base of memorized basic skills with their understanding of jazz improvisation, gleaned from listening to and transcribing jazz music, and embellishing and transforming all of this into their own style through personal interpretation.

3.3.1.3 Learner Self-reflection and Metacognition

Along the lines of self-directed learning, several jazz improvisation researchers agree that jazz improvisation pedagogy must include student self-reflection (May, 2003; Thomas, 1970; Volz, 2005). Education scholars recommend training metacognition (monitoring your own learning) to promote enduring learning (Bransford et al., 2000; Ericsson et al., 1993; Thomas, 1970; Willis, 2010). According to West, Farmer and Wolff (1991), perception is constructive, not receptive, and therefore the focus during teaching should be on what the learner is doing mentally (p. 9). There must be plenty of time to allow construction to occur, as well as opportunity to actively, mentally process (p. 9). Pressing (1998) recounts that to receive maximal benefits from practice, "individuals need to monitor their results with full and sustained attention" (p. 50).

In the MMCP, “similar strategies and processes were often tried in classrooms from kindergarten to college in an attempt to gain clues about sequence, time, the students' direction of inquiry, and effective learning processes” (Thomas, 1970, p. 1). They found that “the attitudes of the student toward his own accomplishments became a most effective barometer for assessing the effects of various educational practices” (p. 2).

Lissa May’s (2003) exploration of influences that impact improvisational success in 73 undergraduate jazz-ensemble wind-players, confirmed the MMCP’s conclusions. May found that “self-evaluation of improvisation ability (53%), aural imitation (8%), and improvisation class experience (5%) explained a total of 66% of the variance” in her factor analysis (p. 253). In other words, self-evaluation of improvisation ability was more important than any other factor measured for assessing improvisation achievement. In his doctoral thesis investigating factors that predict improvisation success, Ciorba (2006) extrapolates that through “self-assessment strategies, beginning improvisers can assess their playing strengths and weaknesses in order to further develop their improvisational abilities” (p. 83). Concepts that are consistent with the MMCP’s findings thirty years earlier.

Conversely, Limb and Braun (2008) relate that “in other domains [that involve creativity] it has been shown that focused attention and conscious self-monitoring can inhibit spontaneity and impair performance” (p. 4). But perhaps this is more to do with self-regulation *during* a creative activity as opposed to reflecting on practice *after* the fact. I consider this to be the double edged sword of having a higher brain – we have the cognitive ability to perform spontaneous creativity, but we also have the ability to over-think what we are doing. In other words, too much thinking and self-regulating (and self-doubt) can deter success in creative action.

3.3.1.4 Listening to Your Own Improvisation Recordings

One way for students to reflect on their learning is to record their improvisations and then listen to the recordings with a critical ear. In his doctoral thesis, Berkowitz (2009) states that listening to your performances is a necessity for learning to improvise (p. 32). This tool is often used in jazz performance classes to promote self-reflective

learning. In a randomized control intervention study of 90 grade-six students, Partchey (1973) investigated the effectiveness of listening to your own improvisation recordings for improving ability to improvise melodies (p. 79). The participants who were assigned to the "feedback" group had three strategy learning sessions where they repeatedly attempted to improvise a melodic performance over a recorded piano accompaniment, but before each attempt, they listened to their past performances of these improvisations (p. 80). These students showed improvements in ability to improvise a melody and particularly in the creative aspects of a melody (p. 88).

Similarly, Ciorba (2006) had 102 high-school jazz-ensemble students listen to their recorded improvisations and assess their achievements. Ciorba's findings led him to recommend that students listen to recordings of their improvisations in order to increase their jazz improvisation achievement (p. 93). Jazz music educator Augusto Monk (2013) also endorses this learning strategy as long as the focus is on "what could have been better", instead of "what went wrong", when reviewing the recordings (p. 81).

3.3.1.5 The Role of the Teacher and the Learning Environment

Bloom's (1985) research into the development of talent in children found that learners excelled when individual tutoring was used as the primary method of instruction (p. 4). Bloom states that in this teaching environment, "the average student performs better than 98% of students taught by conventional group instruction, even though both groups of students performed at similar levels in terms of relevant aptitude and achievement before the instruction began (p. 4). One take-home message from Bloom's work is that anyone can become an expert with *favourable learning conditions* and *individualized tutoring.*

For learning to improvise, Pressing (1998) recommends that "a deliberate practice regime is designed and executed under the guidance of an experienced teacher, operating within clear traditions" (p. 48). Elliott (1996) believes that the improvisation teacher's role is that of a mentor or coach that guides the apprentice jazz musician's "thinking-in-action" (p. 12). Jazz improvisation instructors must be able to analyze their students' musical thinking as represented in their playing, to determine what their students are attending to, what they are not noticing or comprehending, what

they are having difficulty with, and what they interpret as musically correct or incorrect (p. 12).

Beckstead (2013) believes that "the most common impediment to the exploration of improvisation in the classroom [is the] fear factor" (pp. 71-72), and this is more often a larger problem among post-secondary and high school students as compared to elementary or middle school students, i.e., the fear of improvisation increases with age (p. 72). According to Azzara (1999), lack of experience may cause a learner to "become increasingly apprehensive about attempting improvisation" (p. 21). In Hsieh's (2012) experience as an accomplished classical musician attempting to improvise jazz music, "the process created enormous anxiety" (p. 158). However, according to Azzara (1999), it is never too late to start learning how to improvise, regardless of your musical background, and he has practical suggestions for helping students to overcome the fear factor (p. 21). Azzara recommends a classroom environment that "encourages experimentation" (p. 21). Similarly, Elliott (1996) recommends "a receptive environment that encourages improvisational risk-taking"♫ which must include "constructive evaluation of students' efforts to achieve creative results" (p. 12). Hsieh suggests two techniques for overcoming students' anxiety, one is providing supportive leadership, and the other is including training in effective communication strategies (pp. 161-162). These are familiar tunes – Schafer (1986) recommended similar settings for learning in the 1960's while the MMCP were on a similar path, and Brad Turner (professional jazz trumpeter, pianist, drummer and university educator) managed this well with young teens at the 2011 Victoria Conservatory of Music Summer Jazz Camp.

This section presented findings from research that looked at the roles of practice, self-directed learning, metacognition, as well as the teacher and the learning environment in improvisation education. It seems evident that these are all important factors that influence learning to improvise jazz. The next section discusses some concepts that are less well agreed upon in the field of jazz improvisation education and are therefore somewhat controversial.

3.3.2. Areas of Conflict in Jazz Improvisation Education

In *The Contradictions of Jazz*, Paul Rinzler (2008) explains that jazz is "remarkable because, in some cases, the form of opposition is dynamic tension in which not only are both contradictory aspects fully present, but their opposition is not resolved" (pp. xiv-xv). This is also true for jazz improvisation education – there are many contradictions and dynamic tensions that are unresolved. The next section addresses this controversy, including the conflicts between curricula that focus on aural learning versus music theory, sequential learning versus immersion, and creativity versus imitation.

3.3.2.1 Aural versus Music Theory/Notation-based Learning

We are all a product of what we hear. (Coker, 1975, p. 64)

This quotation is well backed up by research into music perception and cognition. There is evidence that people implicitly internalize the rules of their own musical culture just by listening, and this internalization makes processing of the structures in one's own cultural music more automatic and efficient (Levitin & Tirovolas, 2009, pp. 216-217; Hassler & Miller, 2008, p. 222).

In the late 1960's, the MMCP compared two methods of learning music: the first encouraged music students to experiment with sounds and make their own compositions before they learned notation; the second required that students write a composition using notation before they had experimented with sounds (Thomas, 1970, p. 47). The results of this comparison led the MMCP to conclude:

> To teach music through notation [first] was to follow the least efficient route possible.…The introduction of elements of notation as they became necessary to fulfill or extend aural thought and to satisfy problems that grew from creative exploration proved most productive. (p. 47)

More recently Baker and Green (2013) compared learning to play a musical instrument by ear from a recording, to learning through traditional notation-based methods that did not included aural learning (p. 146). This study was a 10-week case-control experiment with 32 students aged 10 to 14 years (p. 146). Baker and Green

found that the aural learners surpassed the traditional group in music playing post-tests (p. 141).

This research indicates that it is more effective to learn music by ear before learning through notation. Interestingly, jazz was traditionally learned by ear from listening to other musicians, it was not a notated form of music – so obviously listening to jazz is one way to learn how to improvise. Unlike classical music, which has been notated for hundreds of years, and can be learned off the page so to speak, jazz continues to be primarily an aural form. For musicians trained strictly through notation, learning to play music by ear can be a giant hurdle.

Ironically, most academic jazz improvisation pedagogy focuses on teaching music theory as a foundation or vocabulary to draw from when improvising, but it may be that aural learners don't utilize theoretical concepts when they improvise; it is possible that they develop the ability through comprehensive performance practice, trial-and-error, and a lot of listening to jazz, the way it was traditionally learned. Berliner's (1994) research led him to recommend "aural absorption of jazz before the study of music theory, a relationship that within the contemporary pedagogy of jazz is sometimes reversed" (p. 16). Re (2004) concurs, "current jazz pedagogical practices and methods place less emphasis on the aural-imitative element considered so vital in learning the language of jazz" (p. 2). Zimmerman (2010) contends that most jazz improvisation instructional methods focus on "pitch choices, harmonic considerations, and scales, ... [with] little or no mention of ear training (p. 45). While teaching a jazz improvisation class, LaPorta (2000) was alerted by a student to the disconnect between approaches to teaching improvisation and the ability to improvise; "we teach theory first and then expect them [learners] to be able to somehow miraculously use it in context" (p. vi).

This curricular focus on theory seems strange given that much of the literature and most jazz musicians extol listening to jazz music as being fundamental for learning to improvise. It also makes me wonder if jazz improvisation education has gone off the rails since it became an academic subject when compared to the original method of learning by ear through playing with other musicians. Berkowitz (2009) feels that to internalize a style adequately to be able to improvise in that style requires a complete

subconscious understanding of countless relationships, and this can only occur through listening to yourself, others and compositions in the style, it cannot be described adequately in written materials (p. 32). Similarly, linguist and musician Barry Velleman (1978) believes that sound patterns should be internalized aurally before they are studied in written form. In a similar vein, Elliott (1996) believes that "improving jazz musicianship does not depend on the slavish repetition of scale and chord patterns, or the memorization of verbal concepts" (p. 11). This is in line with Jerry Coker's (1975) personal experience and what he prescribes as the best way for developing a personal jazz style – i.e., listening to and developing an understanding of all the historical styles of jazz (pp. 2-3). Indeed, Greennagel's (1994) doctoral research into predictors of jazz vocal improvisation skills revealed that the number of hours spent and the frequency of listening to jazz are important predictors of vocal jazz improvisation achievement (p. ii). This notion is also supported by Kevin Watson's (2010) study that compared the effects of aural versus notated instructional material on jazz improvisation achievement. Watson's findings not only showed that instruction does improve jazz improvisation ability, he also discovered that instruction utilizing aural methods resulted in significantly greater gains in improvisation ability than instruction through notation (p. 240). Salonen's (1986) doctoral research that investigated the teaching methods of seven experienced jazz musician/instructors indicated that jazz curricula should place more emphasis on playing by ear (p. i). These findings are strikingly similar to the MMCP's findings in the 1970's.

May's (2003) research on the abilities that influence jazz improvisation success backs this up. May used several measurement tools to evaluate jazz improvisation ability including jazz theory achievement, aural skills, aural imitation, improvisation evaluation, and subject experience. Jazz theory achievement and aural skills (specifically ear training) were determined to be so unimportant that they did not enter the prediction model of factors that influence improvisation achievement (May, p. 253). Strangely, Ciorba's (2006) experimental study of predictors of jazz improvisation achievement found conflicting results. Ciorba found that jazz theory knowledge was a significant predictor of jazz improvisation achievement (pp. 76-77). Unfortunately, neither of these studies investigated the pedagogical approaches that resulted in jazz improvisation achievement. Hart (2011), on the other hand investigated the success of

one approach to teaching improvisation. Hart used a 14-week aural jazz improvisation instruction program, which resulted in improved improvisation ability in undergraduate non-jazz major music students (see p. 26).

Although this dichotomy between the opposing cognitive processes involved in playing notated music versus improvising by ear is conceptually evident, the physiology responsible for this phenomenon has only just started to be explored. According to Gruhn and Rauscher (2008), brain research has revealed that auditory guided vocal learning is essential for the transfer of melodic and rhythmic patterns into working and long-term memory, and therefore, "active music making, singing and moving are the primary modes of teaching and learning [that should occur] prior to any kind of verbal explanation" (p. 275). This aligns with the MMCP's findings, and is supported by recent fMRI studies of brain function during improvisation.

Limb and Braun's (2008) fMRI study that compares brain function while improvising to brain function while playing a memorized composition, offers some insight into why it is so difficult for many classically trained musicians to learn to play jazz, and perhaps even some notion of why knowledge is domain specific. As described earlier, Limb and Braun found that certain areas of the brain were consistently deactivated or inhibited while other areas were activated during improvisation, whereas, there was reciprocal activity during the memorized performance (p. 3). These findings may explain why people who have learned music strictly through notation find it so difficult to learn to improvise, they must switch off the part of the brain that is programmed to work during music performance in order to learn how to improvise — perhaps reverse or unlearn automated functions. Sadly, these results also support Watson's (2010) experimental findings that notated instructional material is not effective for learning to improvise, and further imply that this method of teaching may even be a deterrent.

Robert Hores' (1977) conviction that the development of confidence in the area of aural perception is essential in the process of jazz improvisation led him to compare aural and notational teaching approaches in his doctoral research. Hores assigned 42 high school students to a 16-week aural or notation based instruction group and discovered that "both groups improved significantly in the area of improvisational skill,

there was no significant difference between the aural and the notational groups" (p. 139). However, Hores empirical observation was that a background in traditional music training and experience appeared to restrict achievement in jazz improvisation (p. 141).

Berkowitz (2009) and Bailey (1993) both look at this conundrum from another perspective altogether. They feel that the "paralysis" that virtuosic musicians who are not improvisers exhibit when faced with the prospect of improvisation, is attributable to "an over-reliance on music notation, a habit that is often developed as students learn in notation-based formats" (Healy, 2014, p. 69). And therefore, the best way to avoid this is to "acclimate young students to divergent improvisational activities early in their musical development" (Healy, p. 69). Although not specific to learning to improvise Lucy Green's (2008) Informal Learning method offers a glimmer of hope – the initial method of music skill and knowledge acquisition in Green's scheme involves learning by ear, not through notation (p. 10).

3.3.2.2 Sequential, Scaffolded, and Spiral Curricula

According to West et al. (1991), curriculum design must consider "the cognitive strategies with which people learn" (p. 3). In her article on neuroplasticity and learning, Judy Willis (2010) claims that neuroscience research into learning indicates that information presented in organized relational patterns promotes memory retention and higher learning. This fits with West et al.'s assertion that the mind learns by fitting new information into existing knowledge structures as demonstrated by cognitive science research (page 10). Learning is "primarily folding or wrapping something relatively new within what we already know" (p. 9), and what we already know is stored in "packets or bundles" called "schemata" or "scaffolds" (p. 7). According to West et al., "perception is active, constructive, selective and schema driven" (p. 8). In other words, what we perceive is imbued by what we already know, such that our interpretation and meaning making of any event is constructed in terms of our schemata (p.8). "Schema present will act as the constructive core around which detail will be added" (p. 9). In this model, schemata make learning possible; the "schemata of learners exert powerful influences on input of information (perception), the processing of that input (comprehension) and recall of abstractions of that input" (p. 10). Therefore, schemata have profound implications not only for learning, but also for instruction and curricular design (p. 9).

Based on his 30 years of teaching music, Gordon (2012) developed a pedagogical method that is sequentially organized so that "everything students are learning builds logically from what they have already learned" (p. viii). Another approach to curriculum that could be considered a form of scaffolding is referred to as *spiral*. Jerome Bruner (1960) developed this approach and it was endorsed by the MMCP in their international music education intervention. Bruner explains that learning occurs in a spiral way; as students learn new concepts and acquire new skills, they move from one level of the spiral to the next one above it. But they revisit the basic ideas and knowledge they attained previously on lower spirals frequently, linking new experiences to earlier ones as they construct new knowledge (p. 13). Canadian music educator Ed Wasiak (2013) explains that learning to play music is so complex that it is not possible to learn and perfect each individual component such as rhythm, instrumental tone, and pitch fully without learning about the other components concurrently (p. 110). Wasiak embraces Bruner's curricular model as the most effective for teaching music, and likens it to a spiral staircase where concepts and skills can be addressed multiple times as higher levels of understanding and mastery develop (p. 110).

It appears that a sequential, scaffolded or spiral curriculum is congruent with brain function, and has been used successfully in music education, but how about for teaching improvisation? The literature is in disagreement as to whether jazz improvisation should be taught sequentially or through immersion. Kratus (1996) believes that improvisation is "a variety of different behaviours that develop sequentially" (p. 20). Kratus's model of improvisation has seven levels of improvisation that unfold sequentially and build on each other. The student progresses stepwise as they achieve the skills of each level. Kratus's advice is that instruction "must be at the correct level for the learner – not too advanced for beginners and not too basic for more advanced players" suggesting that different instructional methods are required for experienced vs. novice improvisers (p. 30).

Filsinger's (2012) research utilized a scaffolded approach to teaching improvisation to novice music teachers. His success with this group led him to surmise that students may also benefit from scaffolded instruction that is based on learning repertoire, and occurs in small-group settings (p. 147). It is important to recognize that

this interpretation was based on a small cohort of six, who were novice music teachers, but it is none the less informative.

Hargreaves (2012) recommends focusing on strategy-generated ideas when teaching beginners who have not yet developed audiation ability, which assumes that learners progress through stages as their skills improve (p. 360). Volz (2005) recommends listening for structure, "when a student can repeat patterns and is developing his or her own patterns, unstructured exploration has ended and the student is moving up in development" (p. 53). Elliott (1996) mentions "scaffolding" as a basic principle for teaching improvisation (p. 11). He uses practicing with a recorded rhythm section accompaniment as an example of scaffolding. This practice forces learners to generate musical ideas in tempo continuously, and gradually over time may promote the automation of this skill (Elliott, p. 12). Pressing (1998) explains that studies into the role of practice in the acquisition of expert performance show that this kind of practice must be "individually tailored and target particular *sub-goals* that stand in definable relation to the central task", implying a sequential approach (p. 48).

In his doctoral study Zwick (1987) analyzed and compared 13 published jazz improvisation teaching methods through content analysis, to identify instructional areas that were teaching priorities, and major teaching strategies (p. 414). Zwick identified 15 instructional areas that were essential to the teaching strategies represented in all of the teaching methods he reviewed:

1. History of improvisation
2. Jazz improvisation fundamentals
3. Ear training
4. Jazz style
5. Analysis
6. Form and structure of jazz music
7. Melodic improvisation
8. Patterns for improvisation (high priority for a majority of methods)
9. Chord progressions (high priority for all methods)
10. Rhythm Section
11. Substitutions

12. Transcription Of Jazz Solos
13. Improvising on jazz music (high priority for a majority of methods)
14. Scales for improvisation (high priority for a majority of methods)
15. The blues (p. 408)

Based on the emphasis placed on number 8, 9, 13 and 14 in the various published texts, Zwick concluded that these approaches are high priority for teaching improvisation (p. 408). Zwick also concluded that a sequential, scaffolded approach to jazz improvisation instruction was necessary "based on the analysis and comparison of the emphasized instructional areas and major teaching strategies" (p. 408), although it isn't completely evident from his explanation what led him to this interpretation.

The researchers discussed in this section advocate for a sequential scaffolded approach to teaching and learning jazz improvisation. There are others however, who believe that the approach needs to be more holistic and multidimensional as elaborated in the next section.

3.3.2.3 Situational/Experiential Learning - Immersion & Transfer

> *Tell me and I forget, teach me and I may remember, involve me and I learn.*
>
> –Benjamin Franklin

Education research has shown that exposure to practical contextual learning is important to developing expertise. Expert-novice studies also show that early participation in authentic disciplinary activities is paramount to advancement; activities such as practical scenarios, case studies, and apprenticeships that start with shadowing and progress to more central responsibility (Schunn & Nelson, 2009, p. 399). To me this is all about developing problem solving skills through experiential learning. The problems posed must be at the appropriate level of complication for the learner (i.e., easier for novice, more complex for expert), since the experienced student is able to apply meaning to problems in a broader way, and possibly transfer their learning to real-life situations.

Twenty years before West et al. (1991) published their book *Instructional Design: Implications from Cognitive Science*, the MMCP put extensive attention towards discovering the processes involved in learning music. Although the MMCP predated the cognitive science that West et al. describe, the MMCP also revealed the relevance of *situation* or *context*.

> Experiences in experimental classrooms showed that the type of involvement through which the students acquired information was as significant as the information itself. The students' understanding of information and their attitudes toward it were largely shaped by the nature of the learning experience. It was not merely an acceptance or rejection of information. The connotation of ideas varied with the context in which these were presented. For example, recordings of music presented as items for general listening were regarded by the students on an entirely different basis from records which were made available as reference samples for their own musical ideas. (Thomas, 1970, p. 3)

Around the same time that the MMCP was doing their experiment, the *Contemporary Music Project for Creativity in Music Education* (1966), commonly referred to as CMP, undertook several pilot projects in various schools around the United States to study learning music through creativity and innovation. These experimental projects included creative music experiences in improvisation and composing, utilizing non-traditional methods (p. 3). Learners were provided with opportunities "to discover musical elements for themselves, rather than be told about them" (pp. 81-82). So in addition to immersion into practical musical experiences, these students directed their own learning. Outcomes from the CMP experiments included: "learners had an increased capacity to hear others in ensemble playing and singing"; and students were "challenged by experiences that included creating and performing in conjunction with listening", and thus become interested and motivated to learn (pp. 81, 87).

Several other music educators have come to similar conclusions about best practices for teaching music, which they discovered through trial and error or through research. Lucy Green (2008) recognized the importance of praxis in her observations of people learning to play music informally on their own without instruction, which prompted her to implement an experiential approach for learning music, that she calls *Informal Learning*. Green observed that musical skills and knowledge are assimilated in "haphazard, idiosyncratic and holistic ways" (p. 10). Informal music learning typically

involves the integration of listening, performing, improvising and composing contemporaneously with an emphasis on creativity, as opposed to formal music education which tends to focus on just one of these activities at a time (p. 10). Therefore, Green recommends a sink or swim initiation to learning to play music or as she calls her Stage One "Dropping pupils into the deep end" (p. 25). Students with no previous musical training form groups of their own choosing, select popular music recordings that they like, and try to imitate that music vocally or on their choice of instrument (p. 27).

Renee Crawford (2014) developed a multidimensional/nonlinear, authentic music education model that is based on a "holistic perspective of learning" and simulates real life. Crawford tested the validity of this model in an ethnographic case study of 138 secondary school students (aged 12 to 16 years) in Australia (p. 54). According to Crawford the study results "demonstrated that a holistic and phenomenological approach to teaching and learning music had more successful outcomes than more traditional [one-dimensional/linear] approaches" (p. 64).

More specific to jazz improvisation education, Lissa May's (2003) study of factors and abilities that influence achievement in instrumental jazz improvisation led her to similar conclusions. May assessed the importance of individual factors through multiple regression analyses to identify the most important factors for improvisation success; but in addition to finding individual factors that were significant, she also found high correlation *between* factors which suggests that "instrumental jazz improvisation is a single construct" (p. 255). May summarizes that although it is often "necessary pedagogically to break up a complex ability into manageable sub-skills", the interdependence of the sub-skills incorporated in jazz improvisation suggests that these skills should be developed simultaneously rather than sequentially ♫ (p. 255). May explains:

> Although the results of the present study are very preliminary in nature, a theoretical model for instrumental jazz improvisation instruction drawn from these results might include the following: (a) development of theoretical knowledge of jazz scales and chords, aural skills, and aural imitative ability, (b) acquisition of idiomatic melodic material through memorization of tunes, (c) experimentation with melodic and rhythmic development, and (d) manipulation of expressive elements. These

> should be acquired in an analogous fashion and in an atmosphere balanced between disciplined practice and creative experimentation. (pp. 255-256)

In Elliott's (1996) estimation, "jazz musicianship only develops through active music-making in curricular situations that teachers deliberately design to approximate the salient condition of authentic jazz practices"♫, i.e. performance (p.10). He advocates "curriculum-as-practicum" where students are *inducted* into authentic "teaching-learning situations" in order to develop jazz musicianship ability (p. 10). Elliott explains that "the learning context itself is responsible for a great deal of the teaching and learning that occurs" and uses an analogy of learning to ski:

> The skier does not begin with verbal lectures about skiing….atomistic movements, isolated patterns, or acontextual drills. Their skiing is authentic and holistic.…From the outset novices are located (situated) in an authentic ski situation that enables them to achieve enjoyment very early through a carefully planned teaching-learning situation that matches their novice level of skiership. (pp. 11-12)

Elliot (1996) says, "Confront students with genuine musical problems to solve in context" – context as in the immediate setting but also in relation to the style and standards of tradition of the music they are playing (p. 10). "During the process of authentic music-making [that students undergo], formal musical knowledge ought to be filtered into the teaching-learning situation parenthetically and contextually" (p. 10). In other words, insert these concepts when the relevant situation in the music making arises, and discuss them "in relation to what is happening in the music making" (p. 10). In this way the student learns to solve actual musical problems as they arise – what Elliot calls "goal-directed musical actions" (p. 10). "Contextualization of formal knowledge enables students to understand its value immediately and artistically" (p. 10). Biasutti & Frezza (2006) agree that the musical and social context of the jazz ensemble is fundamental for experiencing the musical events and choices that occur during improvisation (p. 1466).

In a similar vein, Jazz music educator Augusto Monk (2013) conceptualizes improvisation as an interactive collaborative process where improvisational materials emerge out of the musical dialogue that occurs (p. 76). Based on this theory, Monk

developed eight strategies for "teaching improvisation as a collaborative learning practice" (p. 76). Filsinger's (2012) participants discovered that interacting with a group was essential for learning to improvise (p. v).

The research discussed in this section has shown the value of learning environments that are situational, holistic, and contextual. The next section is an offshoot of this orientation that conceptualizes learning jazz improvisation as being similar to learning a language.

3.3.2.4 Learning Jazz Improvisation is Like Learning a Language

> *Just as children learn to speak their native language by imitating older competent speakers, so young musicians learn to speak jazz by imitating seasoned improvisers. In part, this involves acquiring a complex vocabulary of conventional phrases and phrase components, which improvisers draw upon in formulating the melody of a jazz solo.* (Berliner, 1994, p. 95)

David Wish is a public school teacher in California who became frustrated that music education was not offered at his school. In 2002, he developed a free after school music class that he named *Little Kids Rock*. This program mushroomed into a nationwide non-profit organization that provides music education for students in disadvantaged public schools. Wish's methods of music education are non-traditional; instead of teaching music theory and notation, students learn by playing, and they are free to choose popular music that they like (Williams, 2012). Wish sees music as a language and feels the best way to learn music is the same way that people learn language, not by reading but by speaking (Williams, 2012). The music pedagogy of Little Kids Rock draws on language acquisition theory; "Just as the immersion techniques used in second language education encourage students to learn by speaking, Little Kids Rock also encourages students to learn by playing" (Little Kids Rock, 2013). Wish summarizes:

> When you teach people to play by reading music, it is a mathematical approach. In math, there is usually one right answer and an infinite number of wrong answers. However, when you teach music as a language, there are many, many right answers, and making music becomes easier and less intimidating. (as quoted in Williams, 2012, para. 6)

Azzara (1999) likens learning to improvise music with learning a language, and improvising itself with having a conversation; in Azzara's words, "improvisation in music is analogous to the extemporaneous expression of ideas in language" (p. 22). Azzara explains that when people learn language they "develop four ways to use their vocabularies: listening, speaking, reading, and writing" (p. 22). Interestingly, cognitive neuroscience research implicates that language and music are based on shared neural underpinnings (Levitin & Tirovolas, 2009, p. 22). In Azzara's analogy, "musicians also acquire a vocabulary and develop various ways of using it" in improvisational conversations (p. 22). The relevance of this comparison in terms of learning to improvise is that "students can broaden their music vocabulary by listening to and learning music by ear", in a similar way that they expand their speaking vocabulary aurally (p. 22). A computer-based analysis of 48 of Charlie Parker's improvised solos led Norgaard (2014) to infer that pitch and rhythm patterns are encoded during deliberate practice as well as through incidental learning, similar to the processes that occur in language acquisition and motor learning (p. 271). This aligns well with my learning to play tennis analogy (*see* Chapter 1).

Jazz musician and educator Dylan Bell (2013) also describes learning to improvise as learning the "jazz language"; however, he advocates a pragmatic, theory-based approach to learning the vocabulary, rules, and conventions of jazz (p. 2). On the other hand, Wilson and MacDonald (2012) feel that a rule-based language learning model may be inadequate to fully explain the complexity of musical improvisation because this model does not account for the social construction of musical identities that has been argued as being central to jazz improvisation (pp. 559-560). Similarly, Monk (2012) thinks of "learning improvisation as a more holistic process that embraces cognitive aspects other than technical and stylistic vocabulary acquisition" (p. 96).

In summary, the research presented in this section provides evidence that jazz improvisation can be learned through sequential or immersive approaches, and this process is often likened to learning a language. I now move to a discussion that overlaps with learning a language, learning to improvise through imitation.

3.3.2.5 Imitation and Memorization

Consistently, jazz musicians express that learning to improvise involves listening to a lot of jazz music, memorizing standard tunes, as well as transcribing and memorizing improvised solos; in other words developing a memorized jazz repertoire (Bell, 2013; Coker, 1975; Hargreaves, 2012; Re, 2004) (*see* Section 2.1.1.2). Transcription is recommended by most professional jazz musicians and teachers but many also describe a reluctance among learners to undertake this task. I completely understand this because solo transcription is challenging, onerous, and amazingly time consuming – a labour of love really - but, it is also a tremendous spring-board for advancing improvisation skill. Coker feels that transcribing solos results in "a great improvement in the ear, which is essential for transcribing musical *thoughts* as well" (p. 64). Recall that jazz musicians rely on their listening ability when they improvise – they "process, assimilate and react to musical information instantaneously" (Re, p. 99).

In addition to promoting transcription, there is general agreement amongst jazz musician teachers that memorizing jazz chord progressions (e.g. ii-V-I's and entire tunes), and practicing playing patterns, scales, and melodies over them is an essential underpinning of learning to improvise (Azzara, 1999; Berkowitz, 2009; Berliner, 1994; Coker, 1975; Halberstadt, 2001; Hickey, 2009; Schroeder, 2002; Zimmerman, 2010). According to Berkowitz (2009), this practice "allows for the implicit internalization of important relationships in the tonal system" (p. 37). This knowledge subsequently cues the recognition of those same formulas in music that is heard and performed, facilitating further uptake of additional musical features from this input (p. 37). Azzara (1999) also recommends learning to play and sing the bass lines of all the tunes in your repertoire (p. 22).

In his doctoral research, Mark Filsinger (2012) put the *memorize a repertoire in order to learn to improvise* theory to the test through an improvisation workshop for novice music teachers. The workshop curriculum included learning jazz repertoire by ear (melody, bass line, and inner voices), improvising phrases in response to listening (call-and-response), as well as listening to and transcribing improvised solos (p. 36). Filsinger's participants discovered that learning repertoire by ear was helpful for

developing individual improvisation skills. In fact they felt that "interacting with repertoire was essential for learning to improvise" (p. v).

Clark Terry's three steps to learning to improvise begins with *Imitation* – or learning from a model (Eric, 2011). Strangely, or maybe not, the historic treatise that Berkowitz (2009) studied indicated that certain musical concepts were taught through models that provided examples *in context* in the 1700s (p. 29). In other words, this teaching strategy has been around for quite some time. Johnson-Laird (2002) believes that "in creation, no substitute exists for a period of apprenticeship. You learn by imitating successful creators and by trying to create for yourself in a particular domain. Only in this way can you acquire the tacit criteria of a genre or paradigm" (p. 422).

Partchey's (1973) seminal jazz improvisation pedagogy research compared 3 strategies for learning to improvise, namely feedback, models and repetition (p. 79). Partchey's randomized control intervention study of 90 sixth grade students revealed that although all three strategies resulted in improvement, using recorded improvisation models for learning resulted in improved melodic improvisational ability in more participants (p. 86).

Interestingly, brain research has uncovered a cognitive basis for learning from models. In *Neurosciences in Music Pedagogy*, Gruhn and Rauscher (2008) state that "students activate the same neurons while observing an act as those they activate while actually performing the act themselves.…and this neural activation consolidates learning" (p. 271).

On the other side of the coin from imitation is creativity, and perhaps the most controversial area of education – how to teach someone to be creative? But jazz improvisation is a creative act, thus to be able to do it you must have this capacity.

3.3.2.6 Creativity, Self-discovery, Freedom and Exploration

Many teachers of jazz improvisation believe that the curriculum must be creative and designed to promote self-discovery, which might be considered a constructivist approach to teaching and learning (Kratus, 1996; Schafer, 1986; Thomas, 1970; Volz,

2005). In Lucy Green's (2005) estimation, music educators agree that "theory and practice in the field urgently need to embrace diversity" (p. 77). Sadly Green made this comment almost 50 years after the CMP and MMCP published their findings with similar recommendations. Thomas's (1970) report on the experiences of the MMCP describes the public school music education situation in the late 1960's.

> Students, especially at the early stages of learning, exhibited an intense interest in timbre and would spend a considerable amount of time making what to them were appropriate decisions. Activities in pitch discrimination were certainly far more of a concern to the teachers than the students. Unfortunately, students were too often turned from their own lines of significant observation to the teacher's musical interests, thus dampening their own sense of wonder and inquiry. (Thomas, 1970, p. 2-3)

The learners' sense of wonder and inquiry, perhaps the creativity and risk taking required for improvisation, and the attention important for listening in ensemble playing, were quashed by teacher-focused instruction.

Elliott (1996) feels that jazz improvisation education must "help students to acquire a learning-to-be creative disposition" and this is achieved by guiding and encouraging students "to reflect in, on, and about the originality, significance and creative promise of the musical ideas they generate and select" (p. 11). Elliott explains that this "learning to be creative disposition" helps to counteract students' fear of tackling musical projects that are beyond their current level of musicianship and perhaps helps them to overcome the fear factor mentioned earlier (p. 11) (*see* page 36).

Many music educators feel that beginning students need to be free to explore and discover the sounds they can make without rules as to what is right or wrong ♫ (Green, 2008; Kratus, 1996; Schafer, 1986; Volz, 2005). For instance, Volz believes that "exploration is the first step for the beginner of any age or ability . . . beginning improvisers need the opportunity to explore all the possibilities that exist in creating sound" (p. 1). Volz explains, "students need time to find the sounds they can make, to listen intently to their own sounds", and to start to create their own music (improvise) (pp. 50-51). Volz continues, "no notes are wrong, and expressiveness is at the heart of the improvisation activity" (pp. 50-51). Affirming this perception, Kratus's first level of improvisation is called "exploration" (p. 30). According to Azzara (1999),

> Learning to improvise is an ongoing process. As a part of this process, students will make some 'mistakes'. When attempting to improvise, students and teachers can think of mistakes as a means of understanding individual differences. When students make mistakes, it is possible to find out what they understand and what they may not understand. (p. 24)

Some even feel that improvisation originated from mistakes that sounded good – consider early Organum, and Louis Armstrong's original scatting on Heebie Jeebies. Azzara (1999) suggests that the mistakes that one person hears:

> may be the unconscious thoughts trying to get through, or the student may be hearing more advanced ideas. Consider the following scenario: In the context of improvising, a student plays what the teacher might consider a "wrong" note for the harmonic progression. This may be an important way for students to indicate that they do not understand the particular harmonic progression in mind. It may also be, however, a way for students to indicate that they are hearing something on a more advanced level. As many improvising musicians have said, 'There are no 'wrong' notes, just bad resolutions'. In any event, an open mind will help to create a safe environment. In no way is this openness meant to encourage incompetence; it is simply a way to take the fear out of the improvisation learning process and to find out more about students' individual, spontaneous expression of musical ideas. The process has many benefits, not the least of which is a means of finding out whether individuals understand harmonic progressions. (pp. 24-25).

Daniel Coyle (2010), author of *The Talent Code,* has a different take on mistakes. Coyle believes that learning occurs through making mistakes, and therefore making errors is crucial for learning: The most direct method for improving your skills is "operating at the edges of your ability, where you make mistakes" (p. 20). A process that Coyle calls "deep practice" (p. 18).

This literature review has laid out various methods and orientation to teaching and learning to improvise jazz music, looking at them from each perspective or camp as being isolated. However, in most situations a siloed approach is not the most effective given the variability of learners and the complexity of jazz improvisation. More often, at least two perspectives, and maybe even a blending of approaches, will allow the teacher to tap into the learner's interests and motivations.

3.3.3. Blended Approaches

Healy (2014) feels jazz improvisation instruction should incorporate both structured and unstructured/creative approaches (p. 68). Similarly, Pressing (1998) claims that "aural absorption of examples of expert performance, study of theory, and analysis and interactive work in peer group ensembles during rehearsal and performance" is all part of a guided learning regime and promotes progression from beginner to expert improviser (p.48). University jazz music educator Christopher Azzara (1999) advises that developing improvisational skill involves a blended approach that incorporates the following: "listening to improvised music, learning a repertoire by ear, understanding harmonic progressions, and taking the risks necessary to improvise" (p. 22).

Jazz music educator Hal Crook's (1991) "target approach" to learning to improvise involves practicing improvising. Although this sounds incredibly obvious, this is sometimes overlooked when the focus is on didactic theoretical approaches to improvisation. In Crook's method the learner improvises with whatever they are learning, preferably with other people or at least with some kind of accompaniment. Interestingly Crook's approach although contextual and holistic, is also scaffolded because it involves focusing on one sub-skill (such as scale, arpeggios, or rhythmic subdivision) at a time, and utilizing that skill in improvisation until becoming handy with it, before moving on to another sub-skill (Zimmerman, 2010, p. 45.)

Salonen's (1986) doctoral research investigated the teaching methods of seven experienced jazz musicians and instructors, between 66 and 80 years of age, who were non-credentialed and were not trained in the academy (p. i). Salonen's participants generally recommended a blended approach to teaching improvisation; there was:

> a consensus among non-credentialed instructors on how to effectively teach improvisation. Common teaching techniques included modeling improvisation by the instructor, practicing improvisation, teaching scaled/chord associations, listening to jazz music, teaching jazz theory, group improvisation and using jazz standards as the main source of teaching material. (p. i)

Bash (1983) compared teaching improvisation through a technical jazz theory approach to an approach that combined technical theory *and* aural perception and analysis (p. 97). Bash's results indicated that the combined multidimensional approach was significantly more effective for improving improvisation performance ability (p. 102).

Wetzel (2007) developed and tested a new jazz curriculum for beginning improvisers that is based on what he refers to as a sequential, nonlinear approach. Although the wording "sequential, nonlinear" sounds like an oxymoron, Wetzel explains this approach as "presenting learning activities in a somewhat structured, yet flexible, paradigm" which allows the instructor or the student to control the sequence (p. i).

The research reviewed here suggests that a combination of instruction in basic skills, providing opportunities to utilize those skills in practical improvisation settings, and encouraging creative improvisation practice, is the best approach to teaching jazz improvisation – essentially a blended approach. And perhaps the best method would be a developmental model similar to Lucy Green's (2008) approach where the learner starts with immersion to develop their aural abilities, and then progresses to theory when they want to start writing down and analyzing what they are learning. Filsinger (2012) felt that his participants' learned to improvise developmentally (p. 144).

Whether the approach is sequential or immersive, theory-based or aural, imitative or creative, it must take into account the learner, and it seems likely that the route that is most effective will depend on the learner's preference. In Gordon's (2012) words "when teaching is based on learning rather than the reverse, any one of a potpourri of methods and techniques proves satisfactory" (p. xvi).

3.4. Chapter Summary

The overall picture represented by this literature review indicates that the jury is still out on which approaches are best for teaching and learning to improvise jazz music. My intention for doing this study was to attempt to resolve this discussion, not through a comparison of methods, but rather by asking musicians to review statements about teaching and learning jazz improvisation to find out what worked best for them – what

methods propelled them forward with their ability to improvise. The concepts represented in this literature review formed the basis for the concourse described in Chapter 4.

Chapter 4.

Methods

This qualitative study uses Q methodology to discern jazz musicians' viewpoints regarding best approaches for teaching and learning to improvise. This chapter includes a description of Q methodology and my rationale for choosing Q. Following that is a step-by-step description of the processes I undertook to do this research which is also depicted in the flow diagram in Figure 4.1.

4.1. Philosophy of Q Methodology

"Q" is described as a methodology for "scientifically studying subjectivity" (Brown, 1997) that is "useful for studying attitudes" (Simons, 2013, p. 28). Q methodology is a crossover between qualitative and quantitative methodology since it assumes that "subjective viewpoints are amenable to systematic analysis" (Simons, p. 28), and allows the scientific study of individuals' points of view and experiences (Salkind, 2010, p. 119). Simons explains that Q methodology involves investigating individuals' subjective opinions of a phenomenon, as opposed to a deductive method of investigating a stated hypothesis that is based on a phenomenon (p. 28). According to Watts and Stenner (2005), "Q methodology is primarily an *exploratory* technique, it cannot prove hypotheses. It can, however, bring a sense of coherence to research *questions* that have *many, potentially complex and socially contested answers*" [emphasis added] (p. 75).

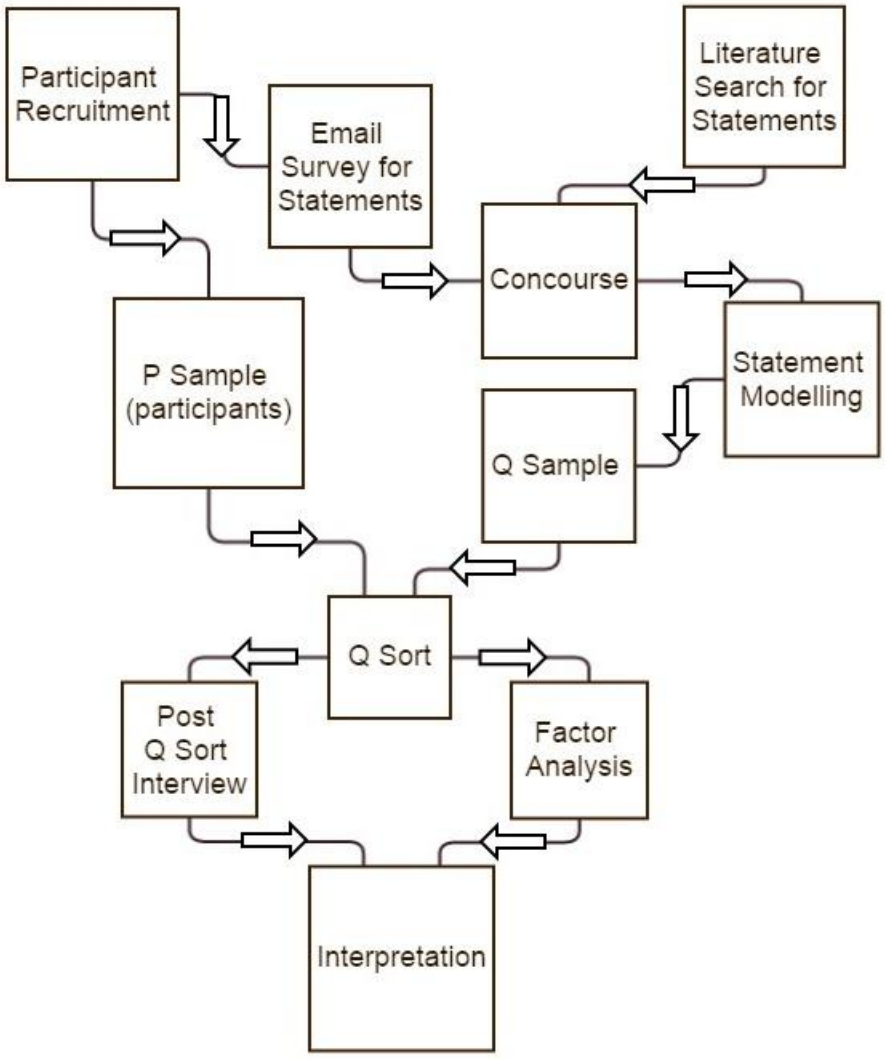

Figure 4.1 **Flowchart outlining steps undertaken in this study**

William Stephenson developed this approach to qualitative research in 1935, and named it Q to distinguish the factor analysis that he utilized from the standard "R" factor analysis that is used in quantitative research. Some researchers label Q methodology "qualiquantological" because the data analysis involves statistical correlation and factor analysis, which are quantitative methods (Watts & Stenner, 2005, p. 69). However, the intent of the factor analysis in Q methodology is very different from "R" factor analysis which utilizes a statistical method of data reduction to look for correlations between measurable variables or traits such as height, weight, and age, from a sample of subjects (p. 68). Instead of attempting to break individuals down into objectively

measurable characteristics and correlate those characteristics, the intent of Q methodology is to look at each participant's comprehensive viewpoint on a topic, and then group those with similar perspectives, in order to make sense of the their shared viewpoints (Barker, 2008, p. 919; Watts & Stenner, 2005, p. 68).

4.2. Relevance of Q Methodology to this Study

In Q methodology each participant performs a Q sort which enables them to present their perspective on a specific topic that *has meaning* for them (Brown, 1991). In their article explaining Q methodology, Watts and Stenner (2005) describe Q as a "very critical method" that "explores *highly complex* and *socially contested* concepts and subject matter from the points of view of the group of participants involved", in order to make sense of them (p. 70). This makes Q an excellent approach for this study which was intended to find out what jazz musicians consider to be the best approaches to teaching and learning improvisation based on their personal experience. A topic that is *highly complex, socially contested* and *has meaning* for jazz musicians. In addition, there are many existing approaches to teaching and learning jazz improvisation, which implies that there are potentially many answers to my research question, and according to Watts and Stenner, Q methodology has the capacity to bring a sense of coherence to research that results in many answers (p. 75).

Although new concepts may emerge from the analysis of individual participant's post Q sort interviews, the intent of this study is to discover jazz musicians' communally held opinions regarding existing approaches to teaching and learning improvisation, and which approaches they believe are effective. An analysis of individual participant's discourses would not enable the exposure of commonly held viewpoints that Q methodology accomplishes. Put another way, instead of focusing on emergent meanings in the narratives of specific individuals, Q focuses on the meanings of viewpoints that are shared by groups of individuals (Watts & Stenner, 2005, p. 71). Watts and Stenner explain that Q methodology allows a more "macroscopic" perspective than other qualitative methods (p. 71). And this is precisely the intent of the present study, to explore jazz musicians' *shared* opinions on how best to teach and learn improvisation.

There are additional benefits to using Q methodology. Although traditional qualitative approaches to exploring subjectivity, such as interviews and focus groups can be helpful for generating theories, the data is often too complex to comply with reduction to a meaningful explanation (Barker, 2008, p. 918). Q on the other hand, is renowned for its "sense-making capacity and ability to find…order even in domains where variability and disparity seem initially to have prevailed" (Watts & Stenner, 2005, p. 73); which pretty well sums up the state of affairs in the domain of jazz improvisation education. Conversely, quantitative approaches such as attitudinal questionnaires and surveys can gloss over an individual's perspective, whereas Q methodology allows each participant's voice to be heard (Barker, p. 918).

A further problem inherent to all research methods is the subjectivity of the researcher, which is ever-present in the analysis. As Barker (2008) puts it, "the investigation involves the researcher's interpretation of the subject's explanation of their experience, not a direct experiencing of the experience" (p. 918). Even test procedures such as questionnaires "necessitate a certain *a priori* imposition of meaning…that is effectively built into the measurement instrument" (Watts & Stenner, 2005, p. 73). Q on the other hand is an exploratory method where participants are asked to express what is meaningful from their perspective, and the meaning and significance are interpreted *a posteriori* rather than relative to a preconceived hypothesis (p. 74). Although the interpretation in Q methodology does leave some room for the researcher's subjective influence, this is minimized by the Q sort, which manifests the reflections of the individual participant, as well as the statistical correlation and factor analysis utilized. Each participant sorts the Q sample of statements according to their own viewpoint. The Q sample does not "possess any specific meaning prior to the sorting process", the meaning is "filled out" by the participant as they sort the statements according to their interpretation of the meaning of each statement, which is very individual (Watts & Stenner, 2005, p. 76). It cannot be assumed that "each statement has a "single, predefined meaning and hence that it could only be ever interpreted in a single way" (p. 78). In addition, as long as the Q sample is broadly representative of the subject matter of interest, "the engagement of the participant group with that Q set will afford a general overview of relevant viewpoints on the subject" (p. 76). According to Watts and Stenner, "a group of participants will ultimately make vigorous attempts to impose their viewpoint

on to any set of statements they are given" (p. 76). In addition, a person's viewpoint about any topic can be effectively gleaned when that person prioritizes beliefs (as expressed in statements in the Q sample) about that topic (Mauldin, 2014, p.2).

Although Q methodology was developed in the 1930's, it is not very well known. However it has an established track record in scholarly research and has been used frequently to study education including music education. Seddon and O'Neill (2005) used Q methodology to look into criteria that are used by adolescents for evaluating their own musical compositions. Through Q methodology Seddon and O'Neill were able to identify three main perspectives among their study participants and were then able to effectively compare these viewpoints to music teachers' perspectives (p. 47). This information is helpful for informing music teachers' awareness of student values and enabling a student-centered approach to music composition education.

4.3. Step by Step Methods

4.3.1. Concourse Preparation

The first step in Q methodology is to prepare a concourse of statements. These statements are intended to be the sum of all relevant viewpoints on the research topic, and must be broadly representative of opinions that matter regarding the issue of interest (Brown, 1991; Salkind, 2010, p. 1149; Watts & Stenner, 2012, p. 71). All of the statements must be possible responses to the research question (Watts & Stenner, 2005, p. 75). Therefore, for this study, each statement in the concourse is a possible answer the question: What teaching approaches (components, elements, and strategies) do expert and novice jazz instrumental musicians find to be most effective for learning to improvise jazz music?

My work to compile the concourse, began with searching and reviewing literature that describes the skills required to improvise jazz music, methods for teaching jazz improvisation, as well as how jazz improvisation is learned. In each document that I reviewed, I identified statements that answered the research question, and these statements became part of the concourse. In addition to collecting statements from the

literature, the concourse was broadened with statements from a variety of other sources including: jazz improvisation workshop and course notes, jazz improvisation instructional materials such as method books and websites, as well as an e-mail survey of jazz music students and instructors (*see* 4.3.3). A total of 361 statements were amassed for the concourse (*see* Appendix 1).

4.3.2. Participant Recruitment – P Sample

I recruited university jazz music students and instructors to participate in this study. Posters that announced the study and invited participants were put up on bulletin boards at Vancouver Island University (VIU). I also visited jazz music classes at VIU to describe the study and invite participants. In addition, professional jazz instrumentalists were contacted by email using their publicly available contact information to request their participation in the study. In the end, twelve professional jazz musicians who teach improvisation in a university jazz music program, and twelve jazz music students or recent graduates of a university undergraduate jazz music program were recruited for this study. The professionals were experienced, accomplished "career" jazz instrumentalists with many years of experience improvising and teaching jazz. The students were novice jazz improvisers with very little experience performing or recording jazz music professionally.

4.3.3. Pre Q Sort E-mail Survey

Some of the statements that were used in the concourse were obtained from a preliminary e-mail survey of three professional jazz musicians/educators and one undergraduate student. The e-mail survey asked the participant to first consider what they thought was important for a person to learn to be able to improvise jazz music, and then to answer the following open-ended questions with as detailed a response as possible:

1. What have you found to be effective ways to learn to improvise jazz music?
2. What have you experienced to be effective ways to teach jazz improvisation?

The participant's e-mail responses were reviewed to find statements to include in the concourse.

4.3.4. Distilling the Q Sample

The sample of statements to be used in the Q sort (*see* Designing the Q Sort below) is called the *Q sample* or *Q set*, which for this study was drawn from the amassed concourse with the intent of developing a miniature set of statements that broadly and comprehensively represented all of the viewpoints expressed in the concourse. Q methodologists consider generating the Q set to be *the art or craft of Q* (Watts & Stenner, 2012, p. 58). When the Q sample is finalized, each statement is distinct; it "makes its own original contribution to the Q set, and the items in their totality all sit neatly side by side without creating unsightly gaps or redundant overlaps" (p. 58). According to Watts and Stenner, a good Q set is not:

> value-laden or biased towards some particular viewpoint or opinion.…All the participants can respond effectively to the research question, in any way that they want, using the items provided.…[They do not feel] limited, restricted or frustrated by failures of balance and coverage. (p. 58)

For this study, the statements in the concourse were modeled theoretically to sort them into categories based on recurrent themes represented. This modeling required some subjective interpretation to determine emergent themes represented in the statements from the content and viewpoints expressed. Initially 57 basic categories were identified, which were considered as sub-themes, and these were subsequently grouped into 26 main categories based on the over-arching themes depicted. One or two individual statements were then selected from each category with the intent that each statement chosen represented a unique viewpoint and yet there was a good representation of all the viewpoints in the concourse to ensure that the Q sample was in essence a mini-concourse. The final Q sample contained 47 statements (*see* Table 4.1). The Q sample was pilot tested by a jazz musician to ensure clarity and easy comprehension of each statement, in addition to comprehensive coverage of the topic in the entire set.

Table 4.1 ***Q sample of 47 statements***

#	Statement
1	Instruction utilizing aural methods results in significantly greater gains in improvisation ability than instruction through notation
2	Improvisation skills should be developed simultaneously rather than sequentially
3	Listen/identify exercises such as interval recognition, melodic dictation, & chord quality recognition are useful
4	Students should trade ideas and build on musical ideas while improvising in a group
5	The best way to learn to improvise is on the band stand playing with a group
6	Learn the ability to listen and hear what other musicians are playing while you are playing
7	"How" to improvise is not explicitly taught, this ability evolves out of an internalized repertoire
8	Improvisation is learned through working alongside masters of the art form
9	Jazz musicianship develops through active music-making in curricular situations that approximate the conditions of authentic jazz practices
10	Practice improvising whatever you are learning in time, on a tune with some kind of accompaniment
11	Be able to play the guide tones of any tune
12	Know the chord changes for the tune you're playing for memory
13	The jazz improviser must learn the rules of improvisation in the jazz style
14	Learn chord-scale relationships
15	Teachers should highlight relationships between improvisation and related music skills
16	Develop a thorough practical knowledge of chords, short melodies, passages, scales, arpeggiated chords
17	Use chromatic approach tones and enclosures
18	Embellishment is good but must be meaningful
19	Examine the blues in 12 keys
20	Emulating what the greats have done is a huge part of the process of learning to improvise
21	Memorize musical vocabulary until you own it in the same way you own the language that you speak
22	Improvisation utilizes stringing together pre-conceived material in a novel way
23	Practice playing continuous 8th notes over a bass line
24	Beginning students need to be free to discover sounds they can make without rules as to right or wrong
25	Development of jazz musicianship requires receptive environments that encourages improvisational risktaking
26	A significant part of learning involves listening to the improvisation of skilled performers.
27	Always learn the lyrics of tunes as well as the melody
28	When soloing, always know where you are in the melody and be able to sing it at any point
29	Knowing many melodies and bass lines is an invaluable resource for improvising
30	Write out lead sheets of material you want to play
31	Solo transcription is a key element to learn both vocabulary and style
32	Make phrases in your solos
33	Practice improvising melodies that modulate through the chord changes of a tune
34	Need to be able to sing what you improvise before you play it
35	Tell the story in a way that convinces the audience
36	Don't think about playing, just play
37	Rehearsal of improv teaches the musician how to craft, call upon, and combine musical ideas in the moment
38	Practice motifs, patterns and scales in all 12 keys repeatedly until they become automatic
39	Learn all the standards in all keys
40	Memorize patterns (riffs) and practice playing them over chord patterns such as ii-V-I's
41	Spend more time with things you have most difficulty with
42	Phrase the entire song - know where you're going when you start, see the finish line
43	Use one or two ideas in each solo
44	When improvising rephrase the melody
45	Improvisation skill begins with taking the risks necessary to improvise
46	Hang your accents/emphasis on 2 and 4, not 1 and 3
47	Practice with a metronome

4.3.5. Designing the Q Sort

Each statement in the Q sample was printed on a small card and the statement number was printed on the back of the card. The 47 cards became the set of statement cards that each participant would rank in the Q sort. Each participant who volunteered to participate was asked to perform a Q sort in order to discern their opinions regarding what works and what doesn't when it comes to teaching and learning jazz improvisation. The Q sorts were done individually by each participant in a quiet room designated for this task. Each participant was initially asked to consider what they thought was important for a person to learn to be able to improvise jazz music, and how they would (or do) go about teaching someone to improvise.

I then asked them to review the statements on the cards and sort them into three piles based on what they considered the importance of the statement was to teaching and learning improvisation. Participants were advised that there is no right answer, and the ranking should be done strictly based on their own opinion. Once they had reviewed and sorted all the statements into three piles, I then asked them to place the cards on a *forced-sort grid* (*see* Figure 4.2) by placing each card in one of the squares according to their ranking, from very important (+5) to unimportant (-5) (*see* Figures 4.3 and 4.4). I also explained that the vertical placement was not hierarchical, so for instance all of the zeros had the same importance. Each participant was given as much time as they needed to sort the cards in the way that they felt best represented their opinion, and to be satisfied with their card placements.

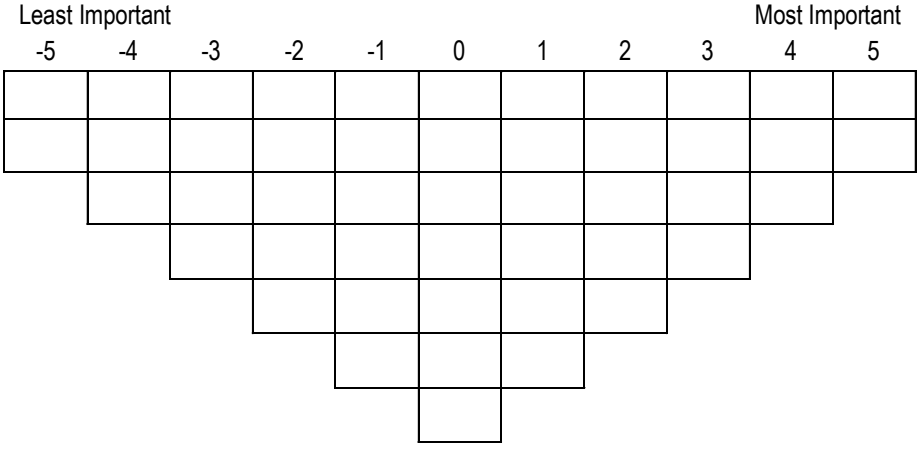

Figure 4.2 **Q sort grid is hierarchical right to left but not up and down**

Figure 4.3 **Participant performing a Q sort**

Note: Copyright free image created by Wikimedia editor Jb3ddd.2009

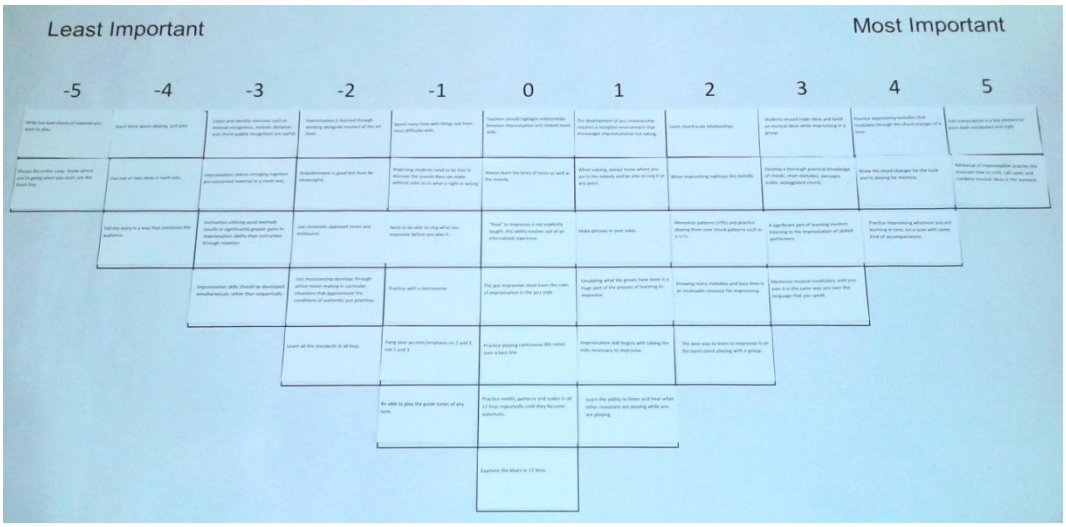

Figure 4.4 **Example of a completed Q sort**

4.3.6. Post Q Sort Interview

After each participant completed placing all the statement cards on the grid, I took a photograph of their sort and asked them the following open-ended questions:

1. Please explain why you placed each statement where you did and what the statements mean to you, especially the statements that you feel are most important and the ones that are least important.

2. If there are any additional statements that you would have included in the Q sort please describe them and why you feel they are important.
3. Please describe anything that you did not understand or found confusing in performing the Q sort.

With informed consent, I recorded the interviews with a digital voice recorder and subsequently transcribed them into a Word document. Each participant's gender, years of music study, and years of jazz improvisation instruction as learner or teacher was documented. After each participant left the interview, I turned the cards over and documented the location of each statement by writing the statement numbers on a paper copy of the Q grid shown in Figure 4.2 (*see* Figure 4.5).

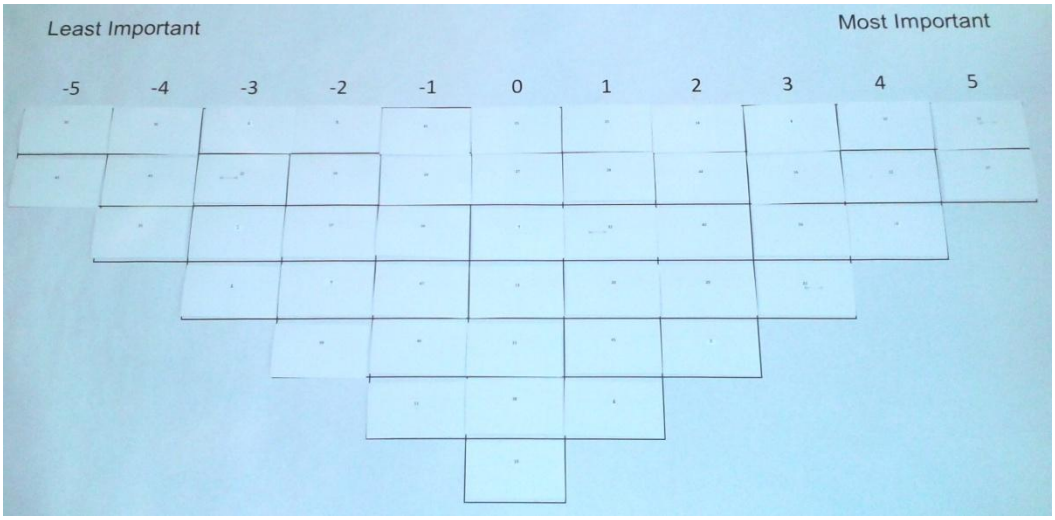

Figure 4.5 **Completed Q sort with statement cards turned over showing the numbers on the back of each card that were entered into PQMethod**

4.3.7. Data Analysis and Interpretation

The configuration of each Q sort was entered into PQMethod (Schmolk, 2014) data analysis software, which was then used to assess for correlations between the individual Q sorts in order to identify common viewpoints; and to perform factor analysis to place participants with similar opinions into groups. The individual statements that were grouped into factors were reviewed to summarize the main opinions represented by each factor, and to identify the main differences between factors. The interview

transcripts were used to assist the interpretations. The findings were then compared to the literature review to look for common representations of what works when it comes to teaching and learning jazz improvisation. Based on this analysis, practical recommendations for teaching and learning jazz improvisation were developed.

4.4. Ethics and Consent

Research ethics applications for this study were submitted to SFU Office of Research Ethics (ORE) and VIU Research Ethics Board (REB) in early 2014, and approval to proceed was received from both in April 2014. The procedures of both the SFU (ORE) and the VIU (REB), which are based on the protocols of the Social Sciences and Humanities Research Council of Canada, were followed for this study.

Chapter 5.

Findings and Analysis

This research explored jazz musicians' viewpoints regarding effective approaches to teaching and learning to improvise using Q methodology, with the intent of synthesizing a constructive jazz improvisation pedagogical framework. Three shared viewpoints regarding approaches to teaching and learning jazz improvisation were expressed by the participants through their Q sorts. I have named each of the viewpoints according to the perspectives they represent: The Pragmatic Emulator, Listen and Just Play, and The Jazz Communicator. A brief summary of each viewpoint is included here, followed by an explanation of the Q factor analysis that led to the identification of the viewpoints, and finally a detailed sketch of each viewpoint with supporting Q Statements and interview quotations.

5.1. Factor Summaries

5.1.1. The Pragmatic Emulator

The Pragmatic Emulator believes that the ability to improvise can be taught through providing tools or strategies for self-learning, such as listening to and emulating renowned jazz musicians, transcribing solos, memorizing standard chord changes, and practicing patterns, i.e., a combination of aural and notational/theory learning. The Pragmatic Emulator sees these musical components as the building blocks of improvisation and should be learned in a sequential order, in a structured learning environment.

5.1.2. Listen and Just Play

Listen and Just Play recognizes “how” to improvise may be something that cannot be taught. Instead, learning to improvise involves listening to and playing with professional jazz musicians, as well as taking risks. The learning environment should be supportive, open to creative self-expression, free of rules, and mimic real-life performance settings. Learning to listen to other players is mandatory, and practicing improvising is more useful than practicing patterns. Solo transcription is important if it is done aurally. Listen and Just Play knows that improvisation skills can be learned simultaneously as well as sequentially, the best method depends on the learner.

5.1.3. The Jazz Communicator

The Jazz Communicator’s main aspiration is to engage the audience with their musical narratives. The Jazz Communicator believes that improvisation can be taught effectively through notation and theory, although learning by ear shouldn’t be overlooked. A systematic, sequential approach that includes solo transcription and memorizing jazz vocabulary through repeated practice is best, but once the basics are in hand, the improviser doesn’t need to think about what they are playing. Knowledge of the style becomes ingrained through extensive listening to jazz.

5.2. Factor Extraction and Rotation

In this section I describe the process of factor extraction and rotation that I undertook to identify shared participant viewpoints that were expressed through their Q sorts. I used PQMethod (Schmolk, 2014) data analysis software to detect correlations between the individual Q sorts in order to identify common viewpoints, and to perform factor analysis which placed participants with similar opinions into groups. Initially centroid factor analysis was attempted with seven factors extracted, but this was abandoned because the factors were too highly correlated, and the third factor had a lower explained variance and participant loading than the fourth, which suggests a glitch in the computation software as explained here.

The intention of factor analysis is to extract the minimum number of factors that explain the most variance. The amount of variance a factor explains is expressed by the statistic *eigenvalue*. Each successive factor extracted should remove as much variance as possible, and there should be a decreasing amount of explained variance in successive factors (and therefore the eigenvalues should decrease successively with each factor). Peter Schmolk (2014, October 7), the designer of the PQMethod software, explains that "certain methods of centroid factor extraction produce irregularities in the series of eigenvalues" (para. 4). This seems to be caused by the computer software algorithm used for centroid factor extraction, which is not able to accurately differentiate declining variance when the numbers become small (Braswell, 2014, para. 3). Principal Component Analysis (PCA) is another option for factor analysis which uses a mathematical model and does not have this issue. Therefore PCA was used to find the best mathematical solution with eight factors extracted, and the variance explained, as expressed by the eigenvalues, declined sequentially as displayed in the graphic representation in Figure 5.1.

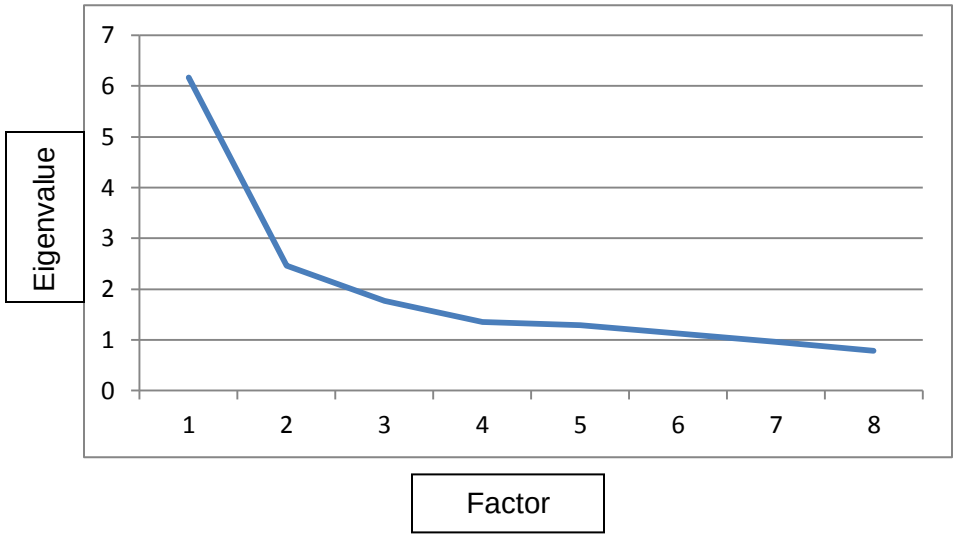

Figure 5.1 **Scree test graph showing unrotated factor eigenvalues.**

A significant factor loading at $p<0.01$ was used as the cut-off point which for this study was 0.38 according to the following calculation that is typically used in Q method (Watts & Stenner, 2012, p. 107).

Significant factor loading = 2.58 x (1 ÷ √number of items in Q set) = 0.38

Once PCA was completed, the explained variance and factor eigenvalues were considered to help determine how many factors to retain. Both of these values indicate the statistical strength, and thus that explanatory power of each factor, and when plotted on a graph or "scree test", a visual impression of this is apparent (*see* Figure 5.1). The point on the graph where the eigenvalues level off is used as the cut-off point for the number of factors to extract. The graphed line changes slope at around the fourth factor, however when four factors were retained, the inter-correlation between factors was above the cut-off of 0.38, indicating there was too much similarity in viewpoints. The only solution that reduced the inter-factor correlation below the cut-off level of 0.38 was a three factor solution (*see* Table 5.1).

Table 5.1 ***Correlation Between Final Factors***

	Factor 1 **Pragmatic Emulator**	**Factor 2** **Listen and Just Play**	**Factor 3** **Jazz Communicator**
Factor 1 **Pragmatic Emulator**	1.0	0.3686	0.3382
Factor 2 **Listen and Just Play**	0.3686	1.0	0.173
Factor 3 **Jazz Communicator**	0.3382	0.173	1.0
Number of Sorts	8	7	2

The first three factors were then subjected to orthogonal varimax, and manual rotation, plus flagging, to look for the best solution with high factor loading of Q sorts, and low inter-factor correlation. After numerous permutations, the optimum solution was identified as three factors with varimax rotation. In this representation 17 of the 20 participant Q sorts loaded significantly onto one of the three factors, leaving three Q sorts that were confounded (shared viewpoints with two or three factors), and the inter-factor correlation was below 0.38 (Watts & Stenner, 2012, p. 141). Table 5.2 displays which participant Q sorts loaded onto each factor and the demographics of each participant. The three Q sorts that were confounded by loading onto more than one factor are shown in blue shading.

Table 5.2 ***Factor Loading and Demographics***

Participant*	Factor 1	Factor 2	Factor 3	Sex	Instrument	Jazz Experience	Age
	Pragmatic Emulator						
SM2GV1	0.6490X	0.0492	0.0736	M	guitar	3rd yr	26
GM2T1	0.6621X	0.2472	0.1099	M	trumpet	4th yr +	23
TM5GB1	0.7321X	0.0191	0.1119	M	guitar	Pro	50's
TM7B1Ear	0.5226X	0.3532	0.2971	M	bass	Pro	75
TM6S1	0.6324X	-0.0032	-0.273	M	sax	Pro	50's
SM2DP2	0.6055X	0.0934	0.0886	M	drums	2nd yr	19
TF4S4	0.5544X	0.0667	0.2472	F	sax	Pro	41
GM2PC1	0.4673X	0.3021	0.1419	M	piano	4th yr +	25
		Listen & Just Play					
SM6S1	0.1429	0.6232X	-0.2565	M	sax	3rd yr	50's
SF2V72	-0.0454	0.6020X	0.1431	F	Vocalist	4th yr	21
SM2BGF1	0.0167	0.7409X	0.0415	M	bass	3rd yr	25
TM5B1	0.3223	0.7366X	0.133	M	bass	Pro	50's
GM2TV14	0.1936	0.6229X	0.3988	M	trumpet	4th yr +	22
TF3B2	0.1891	0.6944X	-0.2663	F	bass	Pro	38
TF4P2	0.0671	0.7390X	0.1688	F	piano	Pro	40's
			Jazz Communicator				
SM2G1	0.1089	0.1281	0.8018X	M	guitar	4th yr	20
TM4PTD2	0.3661	-0.0887	0.6631X	M	trumpet	Pro	40's
					Confounded		
SF5G1	0.4449X	0.5589X	-0.474	F	guitar	2nd yr	55
TM6PTu6	0.4062X	0.4248X	0.2901	M	piano	Pro	60's
TM5T1	0.4781X	0.3820X	0.4922X	M	trumpet	Pro	50's
Explained Variance %	20	21	11				
Eigenvalue	4	4.2	2.2				

Note. X = Significantly loaded Q sort at p<0.01

* First letter code is **S**tudent or **T**eacher, second letter/number code is gender (**M** or **F**), third letter code is age in decades, fourth letter code is instrument (**S**axophone, **G**uitar, **B**ass, **V**ocal, **P**iano, **T**rumpet, **Tu**ba, **D**rums, **C**larinet), fifth letter/number represents college affiliation, Ear means the participant learned music by ear.

5.3. Factor Interpretation

Based on the three factor solution, the PQMethod (Schmolk, 2014) software compiled a representative or optimal Q sort for each of the factors. This representative Q sort is called a factor array and provides the weighted importance of each statement in the optimal Q sort. The factor array is essentially the viewpoint of the factor – as if that factor had sorted the Q sample of statements into a Q sort (*see* Appendix 2). I reviewed the individual statements in the factor arrays to summarize and name the viewpoint represented by each factor, and a factor sketch was developed for each factor based on the factor statement array. The intent here is to uncover, understand, and fully explain the viewpoint captured by each factor which is shared by each of the participants who loaded significantly onto that factor. The factor sketches were developed out of an inspection of the patterning of items in each of the factor arrays, and the differentiating statements, which indicate unique viewpoints. The interview transcripts were used to assist and affirm the interpretations, and to fill out the factor sketches. Consensus statements that were ranked similarly by all three factors were reviewed to identify perspectives that were common to all three viewpoints, particularly those that were ranked as very important, or unimportant for teaching and learning jazz improvisation.

5.3.1. Key to Factor Sketches

The factor interpretations are summarized below in the individual factor sketches – The Pragmatic Emulator, Listen and Just Play, and The Jazz Communicator. The small tables displayed are the statements from the Q sample that I refer to in the text. The ranking range for the Q Score is from minus 5 which is least important, to plus 5 which is most important. The participant's quotes regarding each of the statements are shown in a different font followed by their demographic code which is:

- First letter code is Student (S) or Teacher (T)
- Second letter is gender (M or F)
- Third letter/number code is age in decades
- Fourth letter code is instrument (Saxophone, Guitar, Bass, Vocal, Piano, Trumpet, Tuba, Drums),
- Fifth letter/number represents college affiliation
- Ear means they learned music by ear

5.3.2. Factor 1 Sketch: The Pragmatic Emulator

Factor 1 has an eigenvalue of 4.0 and explains 20% of the study variance. Eight of the study participants significantly associated with this factor, two are university jazz music students, two more are recent graduates from a university jazz music program who now teach and play professionally, and four are accomplished professional jazz musicians who teach in a university jazz music program. This group is made up of seven men and one woman who range in age from 19 to 75 years, are affiliated with a variety of post secondary schools, and play a variety of instruments (trumpet, saxophone, piano, bass, guitar, and drums).

The Pragmatic Emulator firmly believes that the ability to improvise can be taught as evidenced by the weighting of statement 7. However, this teaching is less explicit than telling someone exactly how to improvise; instead, it involves providing tools or strategies for self-learning as expressed by the participants who loaded significantly onto this factor.

Statement Number	Statement	Rank
7	"How" to improvise is not explicitly taught, this ability evolves out of an internalized repertoire	-4

> I think that you can actually teach someone to improvise even if they don't have creative skills in improvising. (TF4S4)

> How to improvise would involve, what kinds of strategies do you use to generate new things? (TM5GB1)

> You can't tell someone what to do in a solo. But you can teach them how to develop that internalized repertoire that informs how you improvise. (SM2DP2)

One of the strategies for learning that is paramount to the Pragmatic Emulator is listening to and emulating renowned jazz musicians, as evidenced by the high ranking of statements 20 and 26. And the Pragmatic Emulator believes that this listening and emulating must include transcribing solos of the pros, as evidenced by the high ranking of Statement 31.

Statement Number	Statement	Rank
20	Emulating what the greats have done is a huge part of the process of learning to improvise	5
26	A significant part of learning involves listening to the improvisation of skilled performers.	5
31	Solo transcription is a key element to learn both vocabulary and style	4

> So, um, ones where you say, "Emulating the greats". So basically it's like having models, role models, and people that you uh, are you know, trying to um, to copy what they do or learn. So solo transcription is the most, sort of concrete way of doing that. (TM5GB1)

> Their brain is beginning to hear more and more of the great improvisers because they're listening and they're having to do transcriptions and things like that. Um, so, it's kind of the practical part of them having to create some kind of improvisation. (TF4S4)

But this learning is not exclusively by ear (aurally) in the way that jazz was traditionally learned. Aural learning is indeed important, however The Pragmatic Emulator promotes a combination of aural and notational learning, as evidenced by the moderately important ranking of teaching through aural methods (Statement 1), which was ranked lower than statements advising a more theoretical or notational approach.

Statement Number	Statement	Rank
1	Instruction utilizing aural methods results in significantly greater gains in improvisation ability than instruction through notation	2

> Depending on the student, I think some students really get it if you give them a visual with notation. But if they're not a strong notation student, the aural method is gonna be huge. (TF4S4)

> A balance for me was just always how I learned best because I had a bit of both kind of thing. I took what I thought was most important from cards that related to aural learning and I took what I thought was most important from the cards that related to notated learning. So there's definitely a mix throughout, just because the way I learned was that way. And the way I think it's best to learn is kind of both at the same time. (GM2PC1)

The Pragmatic Emulator promotes learning the components or building blocks of the music that jazz musicians play, particularly chords and guide tones; in addition to scales, patterns and riffs which should be practiced over chord changes, and this should be presented in a sequential order; as evidenced by the higher ranking of statements 11, 16, 40, and the low ranking of statement 2.

Statement Number	Statement	Rank
11	Be able to play the guide tones of any tune	4
16	Develop a thorough practical knowledge of chords, short melodies, passages, scales, arpeggiated chords	3
40	Memorize patterns (riffs) and practice playing them over chord patterns such as ii-V-I's	3
2	Improvisation skills should be developed simultaneously rather than sequentially	-3

> I thought there are plenty of different improvisation skills that I would totally teach sequentially. Just in the sense that I would make a gradual increase in the difficulty of licks. Or there are certain things, there are lots of, um, I guess it kind of boils down to increasing difficulty.
>
> (GM2PC1)

Additional statements that infer a sequential, theory-based approach to soloing (44, 22, 38, 29, 19, and 3) were ranked between two and zero by the Pragmatic Emulator, but these rankings are differentiating because they are higher than the rankings of the same statements in either of the other two factors. And although this seems like an intermediate ranking, the participants who loaded onto this factor mentioned that there were too many important statements to fit in the plus 5 and plus 4 columns so ones that were important but not the *most* important got bumped down.

Considering the creative aspect of improvisation, although this was not explicitly mentioned in any of the statements, several participants intimated it in their interviews. A review of the interview transcripts of the participants that loaded significantly onto the Pragmatic Emulator reveals that only half of them mentioned creativity and those who did, mentioned it only once in their interview.

Statement Number	Statement	Rank
44	When improvising rephrase the melody	2
22	Improvisation utilizes stringing together pre-conceived material in a novel way	1
38	Practice motifs, patterns and scales in all 12 keys repeatedly until they become automatic	0
29	Knowing many melodies and bass lines is an invaluable resource for improvising	0
19	Examine the blues in 12 keys	0
3	Listen and identify exercises such as interval recognition, melodic dictation, and chord quality recognition are useful	0

Although the Pragmatic Emulator expounds emulating the greats, the low ranking of statements 8 and 5 could be interpreted as contradicting this sentiment because these statements recommend learning to improvise through playing alongside pros and learning on the band stand.

Statement Number	Statement	Rank
8	Improvisation is learned through working alongside masters of the art form	-1
5	The best way to learn to improvise is on the band stand playing with a group	-2

However, a closer look at the comments of the participants that loaded onto this factor resolves this controversy. This pragmatic group indicated that although playing alongside professional jazz musicians on the bandstand was indeed the way that improvisation was traditionally learned, this type of opportunity is no longer extant in these participants' communities.

> I guess part of the problem with that is, students don't get to work alongside masters. (TM5GB1)

> It used to be true. This is how the great players came up. But that doesn't exist anymore. It's not there. (TM6S1)

So even though they believe in learning through listening and playing along with the greats, this will most likely be done with recordings as opposed to in live situations.

The Pragmatic Emulator believes that you need to think while you are playing as indicated by the lowest ranking of statement 36, which is a direct quote from Charlie Parker. Statement 30 is another directive that is considered to be unimportant for teaching and learning to improvise by the Pragmatic Emulator. Similarly, Statement 39 is unimportant to learning to improvise, and was described as unrealistic by the participants that loaded onto this factor because there are thousands of standard jazz tunes, and therefore it is not even conceivable to learn them all.

Statement Number	Statement	Rank
36	Don't think about playing, just play	-5
30	Write out lead sheets of material you want to play	-5
39	Learn all the standards in all keys	-4

> I'm pretty cerebral in my approach, most of the time anyways. If I felt like a student really needed to hear that, I would say that, but it wouldn't be the first thing I jump to. Just because I think that thinking about what you're doing while doing it, shouldn't be a hindrance. (GM2PC1)

Looking at the learning environment, the free unbridled learning situations that some educators espouse, including Listen and Just Play, is not supported by the Pragmatic Emulator. Statement 24, which champions "no rules" regarding right and wrong, is not the Pragmatic Emulator's style (this statement was ranked higher in Factor 2 at plus 3).

Statement Number	Statement	Rank
24	Beginning students need to be free to discover the sounds they can make without rules as to what is right or wrong	-3

> Again that doesn't make any sense to me. It's not about right and wrong first of all. And second of all, then what are you teaching, if they're just playing without any rules, then go home and play. (TM5GB1)

> I had kinda mixed feelings about this one because, I feel like they need to be in a really safe environment, um, in which they're allowed to make mistakes, but at the same time, you don't want to encourage wrong mistakes. That's a very idealistic idea. Just letting people be free and just kind of, express themselves. But, I also think that if you don't give people rules and structure, a lot of them won't know what to say, and again you won't be successful right? I mean sometimes structure and rules are good, and especially with young people and young, inexperienced people, sometimes that's all they need. They need that, and crave that structure. (GM2T1)

Ironically, Statement 13, which promotes learning the rules of the jazz style is unimportant to the Pragmatic Emulator, however, it appears from the interview transcripts that there was some confusion and mixed feelings around this statement which might explain the low ranking of this statement.

Statement Number	Statement	Rank
13	The jazz improviser must learn the rules of improvisation in the jazz style	-2

> Well, I'm not sure what rules means. (TM6S1)

> I was torn on it because, at one point, like when I started, I was "Oh ya, this is fun". And all of a sudden, "You can't do that". "Oh, oh no". "You can't do that, you can't do that, you can't do that". I can't play anything, crap. And then I was in a funk for a little while 'cuz I thought you just played what sounded right to you. But then through learning what you can't play through the taste and style of the music um, it helped me to, like really develop myself. I'm almost a jazz musician. I'm on my way there. Learn the rules but unlearn them, it's amazing to learn the rules, but then it's very good to break them as well. (SM2GV1)

> And you don't want someone telling you the rules, "You must not break these rules" you just inhibit people. Just listen to what they've done and, and I think the intuitive listener will, develop a, a set of his or her own rules. (TM7B1Ear)

> The history and the jazz style is the country you're in you know, and you've gotta know the country you're in before you can know the language. And even if you're wanting to play way outside . . . you gotta fit in the box before you can break out, you know? You gotta understand, it's not even, you don't even need to fit inside the box, you gotta understand what box you're breaking out of. You can't just come at it completely sideways, and say "I'm a jazz musician". (SM2DP2)

5.3.3. Factor 2 Sketch: Listen and Just Play

Factor 2 has an eigenvalue of 4.2 and explains 21% of the study variance. Seven of the study participants significantly associated with this factor; four are university jazz music students, one is a recent graduate who now teaches and plays professionally, and four are accomplished professional jazz musicians who teach in a university jazz music program. This group is made up of four men and three women who are between 21 and 60 years of age, are affiliated with a variety of post secondary schools; seven are instrumentalists (trumpet, saxophone, piano, bass, guitar and drums) and one is a jazz vocalist.

Listen and Just Play recognizes that the ability to improvise involves listening to professional jazz musicians (Statement 26) as does the Pragmatic Emulator and the Jazz Communicator, indicating one area of consensus amongst jazz musicians regarding teaching and learning to improvise.

Statement Number	Statement	Rank
26	A significant part of learning involves listening to the improvisation of skilled performers.	5

> Until you really start listening to people and hearing the awesomeness that is created, you're not gonna be inspired to do any of it yourself. (SF2V72)

> If a person doesn't listen to jazz, it doesn't surprise me that they don't understand how to phrase. (TM5B1)

> This music exists because of the musicians that came before us, so without a reference point, without listening to the jazz musicians of the generations previous to us, without checking out Clifford Brown and Freddy Hubbard, you have no idea what it is that you're trying to strive for, and that's kinda like the textbook, you know? Listening to the greats. (GM2TV14)

> Listening to people who know what they're doing, it just sounds awesome and you want to sound like them, and it motivates you to do that. (SM2BGF1)

However, unlike the Pragmatic Emulator and the Jazz Communicator, Listen and Just Play has less confidence in the success of trying to teach someone how to improvise – Statement 7 has a differentiating rank that is significantly higher than the other 2 factors. Instead of explicit teaching, Listen and Just Play believes that you must take risks in order to learn to improvise (Statement 45), and this is also a defining statement/perspective for Listen and Just Play (it was ranked at minus 1 in the other 2 factors).

Statement Number	Statement	Rank
7	"How" to improvise is not explicitly taught, this ability evolves out of an internalized repertoire.	0
45	Improvisation skill begins with taking the risks necessary to improvise	5

> I mean, improvisation for me has got to be the more spontaneous, the more unpredictable, the uncontrolled situation, rather than trying to pre-map, pre-grid everything. (SM6S1)

> Music is the art of feeling, um, and in order to really be able to tap into that, you have to acknowledge the feeling and the risk involved in improvising at all. Especially for anyone over the age of probably seven, that it's a very vulnerable thing. So, I really value the acknowledgement of the risk, and the acknowledgment of the imperfectness of it. That it is an imperfect process, and it will never be perfect. It's not meant to be. So as you acquire skill and knowledge, if you keep focused on those ideas, that is it's about the expression of the human spirit, and that it's a standing on the edge, and it's an emoting in the moment for people and with people, which is an extremely beautiful and an extremely vulnerable act. (TF3B2)

This concept of taking risks might be considered as essential for creativity, and not surprisingly, a review of the comments made by the participants who loaded significantly onto Listen and Just Play reveals a focus on creativity.

> Creating and building ideas, that for me has been absolutely huge, trying to find those really neat sounds, the notion of creativity, the creative aspect of improvisation, trying to build something that's new each and every time one improvises. (SM6S1)

Consistent with risk taking, Listen and Just Play also advocates a learning environment that is supportive, free of rules about what notes are right or wrong; and open to self-expression, exploration and creativity (Statements 25 & 24).

Statement Number	Statement	Rank
25	The development of jazz musicianship requires a receptive environment that encourages improvisational risk-taking	4
24	Beginning students need to be free to discover the sounds they can make without rules as to what is right or wrong	3

> I think especially when you're starting improvising it's such a scary thing for so many people, and it's so daunting, there's all these ideas that people have around improvising, that even just getting someone to do it at all is often a challenge, and so there needs to be a 100% supportive environment. (SF2V72)

> You need to be comfortable enough to share your ideas with a group. (SM2BGF1)

Given this sentiment towards rules, one might expect Listen and Just Play to have ranked Statement 13 which condones learning rules as unimportant, but this statement is very specific to the stylistic rules of jazz, and the ambivalent ranking of this statement is explained by the following comments from the participants that loaded onto Listen and Just Play.

Statement Number	Statement	Rank
13	The jazz improviser must learn the rules of improvisation in the jazz style	0

> The rules of harmony, and the rules of being able to manipulate, melodies and harmony are really important, but stylistically I love it when they mess with it and you know, put different styles in. (SF2V72)

> The best thing about music really, is that it's, ideally a balance between being creative and open, and being disciplined. (TM5B1)

Listen and Just Play identifies developing the ability to listen to other players while you are playing as a mandatory skill for becoming an accomplished jazz improviser (Statement 6).

Statement Number	Statement	Rank
6	Learn the ability to listen and hear what other musicians are playing while you are playing	4

> You know, music is a shared abstract concept, and so you can't do it by yourself, and you have to listen to other people. I honestly feel that listening is the most important thing to making music. (SM2BGF1)

> You're responding to what's happening around you, and the music is communicative. It's not isolated so you need to really listen to what other people are doing. (TF4P2)

Consistent with that, Listen and Just Play recognizes the value of learning environments that mimic real-life performance settings, as well as playing with accomplished jazz musicians, for learning to improvise (Statements 8 and 9).

Statement Number	Statement	Rank
8	Improvisation is learned through working alongside masters of the art form	4
9	Jazz musicianship develops through active music-making in curricular situations that approximate the conditions of authentic jazz practices	3

> Ya, so using resources where you can play with a rhythm section....So that's where those authentic jazz practice conditions involve playing with a rhythm section of one form or another. I really think that's exceptionally valuable. (TF3B2)

> Jazz is an aural music and it's a community music and it's a social statement type of music. So um, it has a meaning within the community and within society. And there's an aural practice of learning and performing. So if it's possible to kind of re-create that kind of environment, then the music is about people and about how people are relating to each other, and also, um, a little bit about a social movement. (TF4P2)

Similarly, Listen and Just Play feels that practicing improvising is a better way to become an accomplished improviser as compared to practicing running eighth notes, repeatedly practicing patterns and scales, or memorizing melodies and bass lines in rote fashion, as demonstrated by the higher ranking of statement 37 as compared to statements 23, 29, 40, 19, 38, and 17.

Statement Number	Statement	Rank
37	Rehearsal of improvisation teaches the musician how to craft, call upon, and combine musical ideas in the moment.	1
23	Practice playing continuous 8th notes over a bass line	-5
29	Knowing many melodies and bass lines is an invaluable resource for improvising	-4
40	Memorize patterns (riffs) and practice playing them over chord patterns such as ii-V-I's	-3
19	Examine the blues in 12 keys	-2
38	Practice motifs, patterns and scales in all 12 keys repeatedly until they become automatic	-2
17	Use chromatic approach tones and enclosures	-2

Listen and Just Play doesn't think the teacher should focus too much on the links between improvisation and musical theory because it can inhibit the creative instincts of the learner.

Statement Number	Statement	Rank
15	Teachers should highlight relationships between improvisation and related music skills	-2

> You can't start by knowing many things and some people get so choked by the fact that they don't know many things, they let that stop them. (TM5B1)

> If you go too far in that direction then you never pick up your instrument. You know you need to be able to, to just go ahead and try it sometimes. (SM2BGF1)

Not surprisingly, for similar reasons, Listen and Just Play feels that solo transcription is important if it is done aurally as opposed to notationally (Statement 31).

Statement Number	Statement	Rank
31	Solo transcription is a key element to learn both vocabulary and style	0

> Playing with them and listening to them are super important, but maybe writing down every single, nuance, I mean pick up your instrument. You know? (SM2BGF1)

> "Solo transcription", again I'm taking that to mean, not necessarily writing it down, but copying. I'm seeing this as a call to mimicry. Which I think is huge. (TM5B1)

> It is an aural music and it's a language that needs to be internalized and used in an aural method. (TF4P2)

Listen and Just Play feels it's important to make phrases in your solos (Statement 32), but has mixed feelings about using only one or two ideas in each solo - perhaps a good tool for learning to improvise but not when you are actually improvising (Statement 43). And unlike The Jazz Communicator, Listen and Just Play isn't too concerned about trying to win the audience over (Statement 35).

Statement Number	Statement	Rank
32	Make phrases in your solos	3
43	Use one or two ideas in each solo	-1
35	Tell the story in a way that convinces the audience	-1

> These are all things that are good work outs and good things to do in practice, and good methods and tools to becoming a better improviser. But then when all this is said and done I go back over to the ones over here and don't think about it, just play. Play what you love, and play what you hear, and there's bound to be an audience for you. (GM2TV14)

> I think that you need to be *not* concerned about the audience. I think that your focus should be on authenticity and intent. And the story, you may or may not convince anybody of anything, you can't be concerned about that. The minute you concern about that you bring potential anxiety for you're doing the art for other people to mirror back to you. And your art is you and it needs to reflect you in that moment. (TF3B2)

> I prefer to say, tell an honest story. And don't even worry about the audience, 'cuz that can cause a whole lot of problems if you start worrying about what people think. (TF4P2)

For Listen and Just Play, working on time-feel is useful (Statement 47) however, emphasizing a swing beat is not at all important for teaching someone to improvise (Statement 46).

Statement Number	Statement	Rank
47	Practice with a metronome	0

> That's not conducive to um, to improvisation, it's conducive to playing with a strong sense of time, and it's conducive to um, ya to being a very well established instrumentalist. But it's not, in my opinion something that's extremely important to understanding what it is that you're interested in playing and, what it is that you want to play, right? (GM2TV14)

Statement Number	Statement	Rank
46	Hang your accents/emphasis on 2 and 4, not 1 and 3	-5

> Uh, if you feel like it, you know. Like it's again, it's a traditional jazz style. But I mean, it may be obsolete too, you know? Not something that I'm trying to express. (SM2BGF1)

> I think that if you do this [points to the listening card], if you listen, that's not gonna be an issue for you, if you listen to enough jazz that you're not even gonna, that's not something that you need to even think about. And sometimes it's cool, to do a random accent on 1 and 3. (SF2V72)

> Some songs that makes sense, but it's very specific, it's so specific, like sometimes that's the wrong thing to do. (TM5B1)

> I mean that's so specific to swing. (GM2TV14)

Although Listen and Just Play ranked Statement 2 at minus 2, this was a higher ranking than the Pragmatic Emulator and the Jazz Communicator, suggesting that Listen and Just Play believes that improvisation skills can be learned simultaneously as well as sequentially, and the interview transcripts imply that the best method depends on the learner.

Statement Number	Statement	Rank
2	Improvisation skills should be developed simultaneously rather than sequentially	-2

> The reason I guess I would put it in the middle as opposed to over here would be to say that I think it's important to jump in with both feet and like start learning, and see what sticks, you know. So I'm ambivalent and that's why it's [there]. (TM5B1)

> I see it like a mosaic, if you look at one little square, you can't see the big picture, you know you have no idea what you're looking at. And so um, you know, it's just if you throw enough mud at the wall eventually it'll stick, but there's so many abstract concepts here, uh, and they're really deep a lot of the time, you know, that you might as well just give them everything, and then, let them piece it together. You know everyone's mind looks different. (SM2BGF1)

5.3.4. Factor 3 Sketch: The Jazz Communicator

Factor 3 has an eigenvalue of 2.2 and explains 11% of the study variance. Two of the study participants significantly associated with this factor, one is a university jazz music student, the other is an accomplished professional jazz musician who performs regularly and teaches in a university jazz music program. Both of these musicians are men, between the age of 20 and 50, and they both play several instruments (trumpet, saxophone, piano, bass, guitar and drums).

The Jazz Communicator's main aspiration is to engage the audience with the narrative that their music expresses (Statement 35).

Statement Number	Statement	Rank
35	Tell the story in a way that convinces the audience	5

> I guess when you're playing jazz you have to play and kind of connect with the audience and kind of sell what you're playing. If you're not believing what you're playing, if you're just running scales, you're not really connecting with the audience. (SM2G1)

> There's this constant circle of communication that goes on when you're playing for people, you're playing for people. They need to be invited, to understand [the music]. And then they're much more willing listeners than they were before. So that's important. (TM4PTD2)

The Jazz Communicator believes that improvisation can be taught (Statement 7), and feels that learning through notation and theory is effective although learning by ear shouldn't be overlooked, it just depends on the learner which method is best (Statement 1).

> It can be taught. (TM4PTD2)

Statement Number	Statement	Rank
7	"How" to improvise is not explicitly taught, this ability evolves out of an internalized repertoire	-2
1	Instruction utilizing aural methods results in significantly greater gains in improvisation ability than instruction through notation	-2

> SM2G1: I guess I just put ones over here that I didn't really agree with. Like this one. Like the things I just didn't know. Like whether instruction using aural methods is better than through notation. I don't know, I guess if you gave a guy like a Real Book and just locked him in a practice room. And then you gave another guy like some jazz records and locked him in a practice room. Maybe the guy with the jazz records would come up with something more like jazz right? But, I don't know.

Interviewer: Well from your process what would you say, which is closer to your process of learning? With the jazz records or with the Real Book?

SM2G1: Um, I guess, kind of listening to records I suppose, has helped me more. But, um, without, uh, notation and that sort of thing it may have been too overwhelming to me. Like if we came to college and they were just like, "Well you've gotta learn this by ear" like, "There are no Real Books" and it's like "Here's Autumn Leaves", everyone would be just like "What? This is hard" like some people, like probably me included when I was 15, I'd just be like "This is way too hard for me". But since you have a Real Book and you're like "Oh I can like, analyze it and, you know, write down stuff".

The Jazz Communicator condones a systematic, sequential way of learning to improvise (Statement 2) that includes memorizing the structural components of improvisation, in essence the jazz vocabulary, through repeated practice, in time (Statements 12, 47, 21).

Statement Number	Statement	Rank
2	Improvisation skills should be developed simultaneously rather than sequentially	-5
12	Know the chord changes for the tune you're playing for memory	4
47	Practice with a metronome	4
21	Memorize musical vocabulary until you own it in the same way you own the language that you speak	3

But once the basics are in hand, the improviser doesn't need to think about what they are playing when they're soloing (Statement 36).

Statement Number	Statement	Rank
36	Don't think about playing, just play	4

> I guess for learning jazz, I suppose that would be sort of the ultimate goal, is to have everything internalized and when you're performing, just let the creative process flow and not really think about it. You hear lots of pro musicians talk about that, and I would agree with that. (SM2G1)

It is worth mentioning that both of the musicians that loaded onto this factor said that they did not understand statement 2 and that was why they ranked it as unimportant. A review of their interview transcriptions reveals a conceptual framework of initiation to improvisation through immersion, followed by a sequential, scaffolded process. For example, when I asked SM2G1 why he ranked statement 2 at minus 5, he said:

> I don't know if it's either. I don't know the best way to learn improvisation skills. (SM2G1)

But on further questioning regarding how he learned to improvise, he described an initial method of immersion:

> Well I guess when I first started, I used to not know anything about theory or anything and I had "Band-in-a-Box" and I'd just turn on tracks and get the band going and then I'd just play, and try to play just random notes and stuff, right? Just to practice trying to play them in time like in the jazz feel. (SM2G1)

And then after two years of a university jazz music program he utilized a more sequential approach.

> For me I've found that practicing things in a really, uh systematic way, like um, one thing I did last summer was just playing every drop 2 chord I could on the guitar. Just trying to go through every single one. (SM2G1)

And the explanation of his general approach to sorting the statements indicates he didn't understand the statement but does feel that learning is sequential.

> I also kind of um, organized them, with kind of what I guess, like in sequence maybe of learning. (SM2G1)

Given the Jazz Communicator's conception that the accomplished improviser solos without thinking about what they're playing, it makes sense that he doesn't believe you need to worry about learning the rules of the style, instead this knowledge of the

style becomes ingrained through extensive listening to jazz music. As a matter of fact the Jazz Communicator doesn't even realize there are rules.

Statement Number	Statement	Rank
13	The jazz improviser must learn the rules of improvisation in the jazz style	-5

> I don't know what the rules would be. (SM2G1)

> I don't know if there are any rules. I think everyone, you know I mean, I know what I like, I know what I encourage my students to do, and I know the people that I encourage them to listen to and sort of be inspired by. But, at the same time, they can do whatever they want. There's no real rules. Improvising doesn't really have any rules. (TM4PTD2)

As for taking risks the two statements that mention this were ranked as unimportant but on questioning of this it seems that it wasn't that risks weren't necessary or that a receptive environment was not important, it was more that this was not specific to improvisation.

Statement Number	Statement	Rank
45	Improvisation skill begins with taking the risks necessary to improvise	-1
25	The development of jazz musicianship requires a receptive environment that encourages improvisational risk-taking	-3

> I like the receptive environment part, but the risk-taking, I think that, I think even just playing music, it doesn't matter if it's jazz or not, it's just risk-taking anyways, so, but, receptive environment definitely. I think that's important. (TM4PTD2)

And the concept of using one or two ideas in a solo just didn't compute.

Statement Number	Statement	Rank
43	Use one or two ideas in each solo	-4

> I guess you could use one or two or, ten. (SM2G1)

The idea of rehearsing improvisation (Statement 37) did not resonate with the Jazz Communicator either.

Statement Number	Statement	Rank
37	Rehearsal of improvisation teaches the musician how to craft, call upon, and combine musical ideas in the moment.	-4

> I put that down there just because it sounds so technical and so uh clinical. (TM4PTD2)

Similarly, the sentiment expressed in Statement 9 just wasn't relevant to this group, or maybe just didn't make sense.

Statement Number	Statement	Rank
9	Jazz musicianship develops through active music-making in curricular situations that approximate the conditions of authentic jazz practices	-4

> Like what is jazz musicianship? And, what sort of curricular situations are they talking about, that sort of thing. (SM2G1)

As suggested in this next quote, the Jazz Communicator finds solo transcription, which could be both an aural and a notational approach, to be a useful tool for learning to improvise.

Statement Number	Statement	Rank
31	Solo transcription is a key element to learn both vocabulary and style	3

> Solo transcription was a big thing for me. (SM2G1)

This concludes the full descriptions/sketches of each of the factor viewpoints. The next section looks at similarities between factors which are presented in Q as consensus statements – concepts that are shared by all three viewpoints.

5.3.5. Consensus Statements

Table 5.3 lists the statements that were ranked similarly by all three factors, and therefore represent viewpoints that are held in common. What is apparent from this depiction is that the differences in viewpoints were more obvious in the least important statements. In other words, there was not a lot of consensus as to what was least important other than the agreement that "writing out lead sheets" does not influence improvisation ability – everyone pretty much agreed that is a waste of time. However, all three viewpoints, and also the three confounding Q sorts, ranked statements 20 and 26 as important, indicating strong agreement amongst all participants that listening to, and emulating the greats is paramount for learning to improvise jazz.

Table 5.3 ***Consensus Statements***

Statement #	Statement	Pragmatic Emulator Q Score	Listen and Just Play Q Score	Jazz Communicator Q Score
26	A significant part of learning involves listening to the improvisation of skilled performers.	5	5	3
20*	Emulating what the greats have done is a huge part of the process of learning to improvise	5	3	4
32*	Make phrases in your solos	2	3	2
28*	When soloing, always know where you are in the melody and be able to sing it at any point	2	2	2
21*	Memorize musical vocabulary until you own it	1	2	3
44*	When improvising rephrase the melody	2	1	1
3	Listen and identify exercises such as interval recognition, melodic dictation, and chord quality recognition are useful	2	0	0
33	Practice improvising melodies that modulate through the chord changes of a tune	1	0	1
10*	Practice improvising whatever you are learning in time, on a tune with some kind of accompaniment	1	-1	-1
14	Learn chord-scale relationships	-1	1	-1
15*	Teachers should highlight relationships between improvisation and related music skills	-2	-2	-3
30	Write out lead sheets of material you want to play	-5	-4	-3

Note: All listed statements are non-significant at $p > .01$, and those flagged with a * are also non-significant at $p > .05$

5.4. Chapter Summary

This chapter introduced and sketched out the three shared participant viewpoints regarding how best to teach and learn jazz improvisation, and provided an explanation of the Q factor analysis that led to the identification of the three viewpoints. The next and final chapter explains the conclusions that were drawn, relates the findings to the literature, explains the limitations of this study, identifies potential directions for future research, and suggests implications for practice.

Chapter 6.

Conclusions

6.1. Study Synopsis

The aim of this research was to identify the methods, strategies, and concepts described by jazz musicians as being most effective for teaching and learning to improvise, in order to support the synthesis of a constructive jazz improvisation pedagogical framework. As outlined in the Introduction (Chapter 1), three main conundrums that implicate six pedagogical foci were considered in the literature review:

1. A pedagogy that focuses on music theory and notation – the *Analytical* camp
2. A pedagogy that focuses on aural learning – the *Listen to Learn* camp
3. A pedagogy that follows a step-wise sequential process – the *Building Block* camp
4. A holistic pedagogy that is immersive and multidimensional, not sequential – the *Just Play* camp.
5. Jazz A pedagogy that focuses on rote imitation – the *Follow-the-Leader* camp
6. A pedagogy that focuses on creativity – the *Experiment, be Original* camp

Q methodology was chosen as the optimum research tool to glean musicians' attitudes toward teaching and learning improvisation. Twenty-four jazz musicians were recruited for this study, four participated in a preliminary email survey consisting of two questions, and 20 performed a Q sort interview (*see* Chapter 4 for detailed descriptions of methods and questions asked). A concourse of over 300 statements that together formed a comprehensive expression of jazz musicians' viewpoints on how best to teach and learn to improvise was assembled from a literature review, personal workshop/course notes, and the four email-survey responses. A representative sub-sample of 47 statements to be used in the Q sorts was selected from the concourse

using emergent themes. Twenty participants performed Q sort interviews, and the resulting Q sorts were entered into Q data analysis software (PQMethod, Schmolk, 2014), which was used to assess for correlations between the individual Q sorts, and perform factor analysis to enable grouping of participants with similar viewpoints.

6.2. Summary of Findings

The optimum factor analysis that revealed independent (non-correlated) viewpoints regarding teaching and learning jazz improvisation was a three factor solution. In this representation 17 of the 20 participant Q sorts loaded significantly onto one of the three factors/viewpoints. Statement weighting in each factor was reviewed to glean the overall viewpoint expressed. The Q sort interview transcripts were used to assist in this factor interpretation. The three main viewpoints were named according to the perspectives they represent, The Pragmatic Emulator, Listen and Just Play, and The Jazz Communicator.

6.2.1. Factor 1 Summary: The Pragmatic Emulator

The Pragmatic Emulator believes that the ability to improvise can be taught through providing tools or strategies for self-learning, such as listening to and emulating renowned jazz musicians, transcribing solos, memorizing standard chord changes, and practicing patterns, i.e. a combination of aural and notational/theory learning. The Pragmatic Emulator sees these musical components as the building blocks of improvisation that should be learned in a sequential order, in a structured learning environment.

6.2.2. Factor 2 Summary: Listen and Just Play

Listen and Just Play recognizes that “how” to improvise may be something that cannot be taught. Instead, learning to improvise involves listening to and playing with professional jazz musicians, as well as taking risks. The learning environment should be supportive, open to creative self-expression, free of rules, and mimic real-life performance settings. Learning to listen to other players is mandatory, and practicing

improvising is more useful than practicing patterns. Solo transcription is important if it is done aurally. Listen and Play knows that improvisation skills can be learned simultaneously as well as sequentially, the best method depends on the learner.

6.2.3. Factor 3 Summary: The Jazz Communicator

The Jazz Communicator's main aspiration is to engage the audience with their musical narratives. The Jazz Communicator believes that improvisation can be taught effectively through notation and theory, although learning by ear shouldn't be overlooked. A systematic, sequential approach that includes solo transcription and memorizing jazz vocabulary through repeated practice is best, but once the basics are in hand, the improviser no longer needs to think about what they are playing. Knowledge of the style becomes ingrained through extensive listening to jazz.

6.3. Discussion of Findings

6.3.1. Three Viewpoints Suggest Three Approaches to Teaching and Learning Jazz Improvisation

The three main viewpoints expressed in this analysis could be used as the conceptual framework for designing three approaches to teaching jazz improvisation, one approach to addresses each factor viewpoint, and the approach(es) to be used in any situation would depend on the learner (*see* Figure 6.1). For example, a learner that prefers a pragmatic, sequential, theoretical approach to learning would be offered the Pragmatic Emulator approach; and a student who just wants to dive in and can't be bothered with the theory, would be offered the Listen and Just Play approach. But in most situations, a combination of strategies from two or all three approaches would be required – always to be determined by the needs of the individual learner.

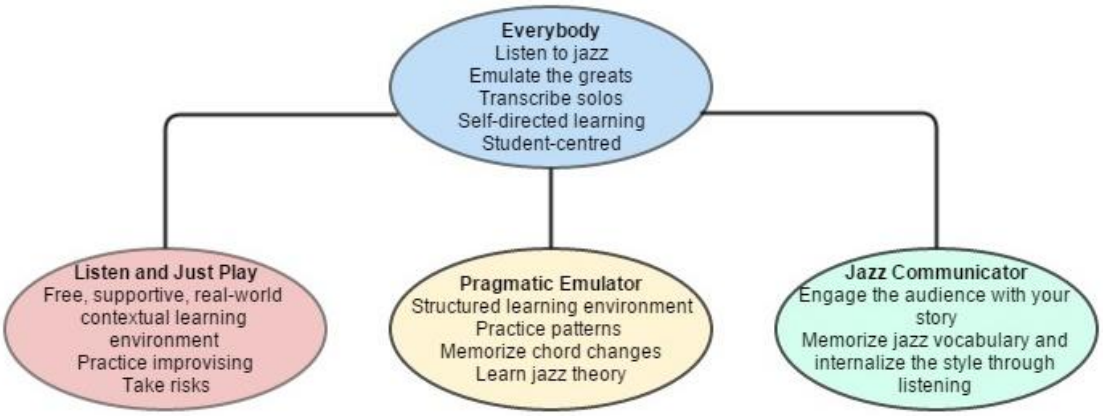

Figure 6.1 **Jazz improvisation teaching and learning approaches proposed from the factor viewpoints**

Careful scrutiny of the three factor viewpoints reveals that all six of the pedagogical orientations that were discussed in the Literature Review are addressed (*see* Table 6.1). However, there is considerable overlap between the Factor 1 viewpoint and the Factor 3 viewpoint which raises the question – what is the difference between them using this paradigm?

Table 6.1 ***Jazz Improvisation Pedagogical Orientations Represented in the Factor Viewpoints***

Pedagogical Orientation	Factor 1 Pragmatic Emulator	Factor 2 Listen and Just Play	Factor 3 The Jazz Communicator
Theory & notation: Analytical	X		X
Aural learning: Listen to learn	X	X	
Sequential: Building block	X		X
Immersion: Just play		X	
Imitation: Follow-the-Leader	X	X	X
Creativity: Experiment, Be Original		X	
Communication: Play it with meaning			X

Note. X = Pedagogical approaches addressed in each factor viewpoint

A theme that was not initially considered, but emerged out of the literature review, the study factor analysis, and the interviews is the importance of communication in jazz improvisation (*see* Chapter 2). Therefore, communication was added to the list of pedagogical orientations (*see* Table 6.1 and Figure 6.2).

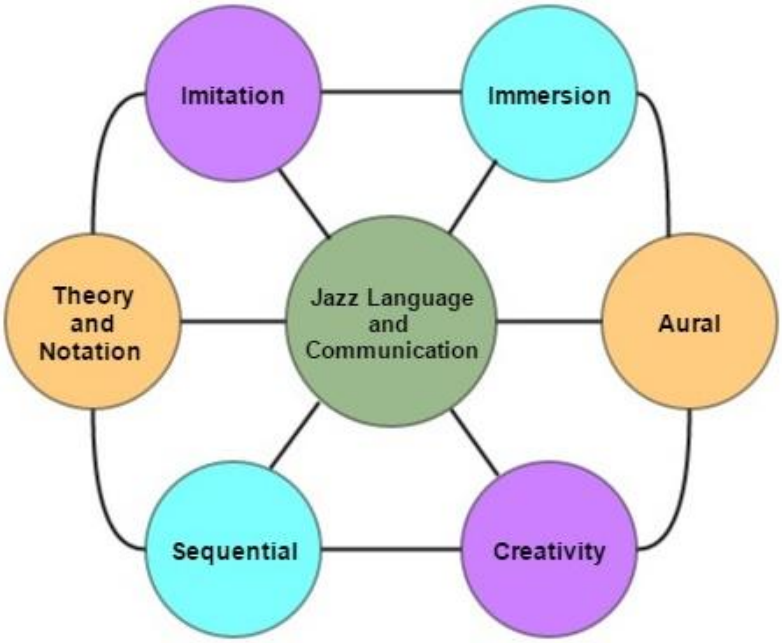

Figure 6.2 **Jazz improvisation pedagogical orientations**

6.3.2. Commonalities Between Factor Viewpoints Regarding Optimum Approaches to Teaching and Learning Jazz Improvisation

6.3.2.1 Listen and Emulate

The Q sort analysis indicates that all improvisation education should include listening to and emulating the pros, regardless of the learner. All three of the Factor Arrays ranked the two statements that implied this orientation as important (*see* Table 6.2).

Table 6.2 ***Q Score Ranking of Statements 26 and 20 by the Three Factor Viewpoints***

Statement #	Statement	Pragmatic Emulator Q Score	Listen and Just Play Q Score	Jazz Communicator Q Score
26	A significant part of learning involves listening to the improvisation of skilled performers.	5	5	3
20	Emulating what the greats have done is a huge part of the process of learning to improvise	5	3	4

Note. Q Score is from minus 5 which is least important, to plus 5 which is most important

In addition, two of the participants who were not included in the factor analysis (because they loaded significantly onto more than one factor and thus were considered to be confounded) also ranked "emulating the greats" and "listening to skilled performers" as most important (+5) and the third confounded participant ranked both statements above zero. This infers that all the participants in this study felt that these two concepts are important to learning to improvise and suggests that they should be foundational to any jazz improvisation pedagogy (*see* Figure 6.1). Although this is not new information, it reaffirms the importance of including these concepts in any jazz improvisation curriculum. As was evidenced in the literature review, extensive focused listening to jazz music is a way of developing your ear, which promotes the ability to hear what other musicians are playing in the moment of improvisation (Bailey, 1993; Berkowitz, 2009; Greennagel, 1994; Hart, 2011; Hores, 1977; Salonen, 1986; Watson, 2010). Through this listening, the style, the vocabulary, and the language of jazz becomes internalized, and the understanding of what to play, and when and how to play it develops.

6.3.2.2 Transcribe Solos

There is evidence that transcribing solos is helpful for advancing improvisation ability, as recommended in the literature and also by the participants in this study. However, it is also evident that there are some learners who find this process frustratingly slow and an annoying loss of playing time, and therefore do not like to do it. So even though this is recognized as a valid way to speed up the process of learning to improvise, this curricular requirement may deter some students to the point where their progress is restrained. It is likely that this problem could be solved through presentation,

which is patent in the suggestions for how best to navigate this issue in the literature. In *Teaching instrumental Music in Canadian Schools,* Wasiak (2013) advises that we must rethink and reform our approaches to music education to meet students' needs. Re's (2004) doctoral dissertation provides several practical examples for making solo transcription a contextual, relevant, and even fun exercise.

6.3.2.3 Writing out Leadsheets Doesn't Improve Jazz Improvisation Ability

It should be mentioned that all the participants in this study felt that writing out jazz leadsheets was not an effective activity for learning how to improvise.

6.3.3. Blended Approach to Teaching and Learning Jazz Improvisation

Interestingly the three participants that were not included in the final factor analysis loaded significantly onto more than one viewpoint (*see* Table 5.2 Confounded Q Sorts). In addition, one of the participants (TM7B1Ear) that loaded onto Factor 1 also loaded fairly highly onto the other two factors (0.35, and 0.30) although not high enough to reach the significant factor loading criterion of 0.38. Three other participants who loaded significantly onto one factor also showed leanings towards an additional factor but again not significantly. In other words these seven participants shared some of the views of at least two factors, and therefore, might use a blended approach to teaching and learning jazz improvisation. The research into jazz improvisation education suggests that a combination of instruction in basic skills, providing opportunities to utilize those skills in practical improvisation settings that involve aural acuity, and encouraging creative improvisation practice, is the best approach to teaching and learning jazz improvisation (*see* Relevance to Literature below).

6.3.4. Developmental Approach to Teaching and Learning Jazz Improvisation

Another way of looking at the findings is to consider the three factor viewpoints as a developmental learning sequence similar to learning a language as a child – *Emulation, Assimilation, Innovation* – a learning sequence proposed by several of the

educators discussed in the literature review as well as several of the participants in this study (Azzara, 2002; Filsinger, 2012; Green 2008). In this conception Listen and Just Play might be the beginner who wants and needs to be free to take risks and explore the sounds they can make. Once their ear is developed and the basic components of the jazz vocabulary are starting to be laid down, they may become interested in learning the underlying concepts of what they are playing, and how to write down what they are hearing – the Pragmatic Emulator. In this scenario, the Jazz Communicator is at the top of the developmental pyramid – this musician has their trade perfected, they don't even have to think about the minutiae of their solos, these fine details are taken care of at a subconscious level.

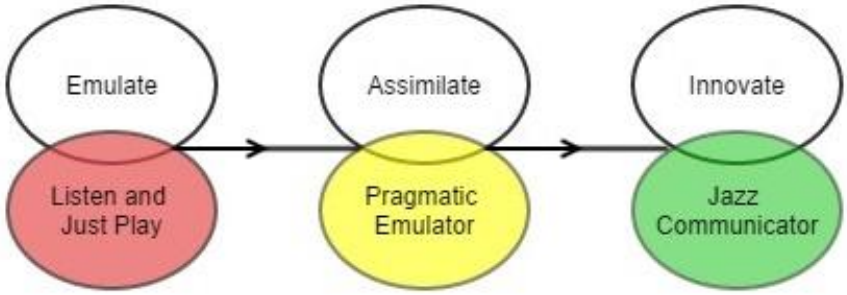

Figure 6.3 **Developmental approach to learning to improvise**

6.3.5. Blended Developmental Approach to Teaching and Learning Jazz Improvisation

The developmental approach described above could be implemented in a spiral fashion similar to the approach originated by Bruner (1960), and endorsed by the MMCP (Thomas, 1970) and Wasiak (2013), where the learner moves up the spiral but also revisits the basic ideas and knowledge previously attained on lower spirals.

6.3.6. Cognitive/Learning Styles

It is somewhat surprising and unexpected that the participants that loaded onto the factors are so varied demographically (*see* Table 2). Each factor includes students and professionals, with a wide age span, from various schools, who play assorted instruments; and Factors 1 and 2 include both men and women. In addition there is no

segregation according to number of instruments played; the demographics are basically all over the map, so it is not possible to associate any factor with a certain demographic. This begs the question: Are the factor viewpoints associated with individual cognitive or learning styles and unrelated to demographics and environment? If this is the case, what a musician believes to be the best way to learn to improvise is very individual, and may be based on intrinsic traits as opposed to demographic and environmental influences.

When I began this study, I assumed that a learner's experience (environment) would have a big influence on viewpoint, in particular the way that they learned, the instrument they played, or whether they were an instrumentalist versus a vocalist, but that is not evident in this sample of 20 musicians. Instead, the results suggest that viewpoint regarding how best to teach and learn to improvise is determined by personal learning style, "an individual's spontaneous or preferred approach to learning" (Green, 2010, p. 44). This finding is extremely salient to learner-based education. If this analysis is representative of the larger population of jazz musicians and is truly indicative of how best to learn to improvise, then teaching improvisation must be tailored to each learner's style to be successful. It also suggests that there should be several orientations to teaching jazz improvisation – one size doesn't fit all. So then, the findings of this study recognize at least three approaches for teaching and learning improvisation, each one attuned to a certain learning style.

Unfortunately the jury is still out on learning styles - although they do seem to exist and may influence learning, there is no consensus on their relevance to education. Gordon (2012) condones using music aptitude testing to allow individualized instruction that can address specific aptitudes, however these tests are designed to assess musical ability, not learner preferences (p. 50). The field of jazz improvisation education is very specialized, and scarcely studied, so potentially this is a vast area for future research. For example, further research is needed to explore whether or not learning styles for jazz improvisation do indeed exist (as this study suggests), and if so, should they influence how best to teach improvisation.

A search of the literature in response to these findings revealed two fairly recent studies that looked at learning styles in music education. Setareh Beheshti (2009) is a university music educator who believes in student-directed teaching. In her article "Improving Studio Music Teaching Through Understanding Learning Styles", Beheshti proposes "using learning style models as a teaching framework.…[so that] teachers can more effectively develop an individualized pedagogical approach for each student" (p. 107). Beheshti recognizes the controversy surrounding learning styles, and suggests that by shifting the focus from large classrooms or aptitude testing environments "to a music lesson, it is possible to take a new look at the efficacy and application of these models" (p. 108). Through Beheshti's experience teaching and observing individual music students, she found that the "Representational System" of learning styles that has three categories (visual, auditory and kinesthetic/tactile), and focuses on sensory stimuli and strengths, is best suited for the music lesson setting (p. 109).

Lucy Green's (2010) research investigating learning to play music by ear unexpectedly revealed four potential *aural learning styles* that were not related to demographics in 15 instrumental music students aged 10 to 17 (p. 42). Green noticed that her participants approached an assigned task in distinctive ways which she construed as the "impulsive", the "shot in the dark", the "practical", and the "theoretical" style (p. 42). This was a small exploratory study, but it could be considered ground-breaking because it doesn't appear that anyone else has researched emergent learning styles in music education. Interestingly there is some overlap between the learning styles that Green identified and the factor viewpoints expressed in this study.

Building on the finding of learner preference in this study, and the relevance of learning style to the pedagogical model that would be most effective for learning to improvise, a pre-assessment might help teachers identify a student's learning preference to enable choosing the best teaching approach for that learner as Beheshti (2009) suggests. Although learning style assessments do exist, whether or not any of them would be applicable in the field of jazz improvisation is a subject for future research.

6.3.7. Relevance to the Literature

The findings of this study lend support to other studies that recommend listening and emulating jazz musicians in order to learn to improvise including Bailey (1993), Berkowitz (2009), Greennagel (1994), Hart (2011), Hores (1977), Salonen (1986), and Watson (2010). Additionally, research that indicates transcribing solos is a helpful tool for learning to improvise is supported, as recommended in Re's (2004) doctoral dissertation. Another concept that is supported is a blended approach to teaching and learning jazz improvisation as recommended by Azzara (1999), Green (2008), Healy (2014), Salonen (1986), and Wetzel (2007). This study also supports a developmental approach to learning music as does Green (2008), and specifically to learning to improvise jazz as does Azzara (2002) and Filsinger (2012).

The findings of this study could be considered to build on Green's (2010) and Beheshti's (2009) recognition of music learning styles.

6.3.8. Limitations of this Study

It is possible that there are additional viewpoints amongst jazz educators regarding how best to teach and learn jazz improvisation that were not represented in this sample for the following reasons. This study included 24 participants and although they represented a wide range of demographics such as age, instrument played, academic institution, and musical experience, there were some overarching similarities. All of the participants were associated with "the academy" and therefore all had been exposed to post-secondary level jazz music education, as well as learning through notation and theory. In addition, all of the participants live in Canada, and they are all Caucasian which means that the viewpoint of the traditional jazz musician – African American – is missing from this analysis.

Another demographic that is underrepresented includes jazz musicians who learned music strictly by ear. One participant in the current study did learn music by ear and interestingly he loaded onto Factor 1 along with seven other participants who did not learn music by ear. However, although this participant did learn by ear, he was inducted into the notational world when he went to college and undertook a degree in music,

which undoubtedly influenced his viewpoint. It should be mentioned however, that there are few musicians still alive that learned jazz strictly by ear. Salonen (1986) was able to find seven jazz musicians who were not credentialed and possibly learned to play jazz by ear, from various jazz music centers around the United States - all were older than 65.

6.3.9. Potential for Future Research

This study included 24 participants. Future studies could include a larger number of participants to capture any additional viewpoints that were missed in this research and/or explore whether or not the orientations identified in this study are truly representative. Another consideration for future research is age groups. Much of the previous research into jazz improvisation teaching and learning has involved students in the kindergarten to grade 12 system. This study included college-aged and older musicians, an age group that has not been studied much in jazz improvisation education research but certainly warrants inclusion in future research.

The finding of this study could be used as a starting point for future research including perhaps experimental or action research to look closer at the three orientations towards improvisation education identified here by implementing them and/or comparing them. There is a great deal of data in the post Q sort interviews that could be analyzed in a follow-up qualitative analysis.

It would be very interesting to look deeper into recent brain function (neurophysiology) research as related to learning jazz music improvisation. Another interesting area for future investigation and clarification is cognitive/learning styles as related to jazz music education. The preliminary findings in this study regarding the relevance of cognitive/learning styles to learning to improvise definitely requires further investigation. Are these styles fixed and do they dictate how a person can best, or must learn? A related study might drill down on demographics and or previous music education experience – are these factors really irrelevant to learner preference in the case of learning to improvise jazz music?

Other areas that were mentioned but not investigated in this study include teacher training and experience, and teaching creativity. Does an instructor need to be able to improvise to teach improvisation? And what are the best methods for teaching someone to be creative?

6.3.10. Implications for Practice

Life is a lot like jazz . . . it's best when you improvise

--George Gershwin

One of the major implications of this study is that all jazz improvisation teaching and learning must include focused listening to the improvisation of skilled jazz performers including the major players in the history of jazz. This process seems to be imperative in order to internalize the musical style and lay down the foundation of the subconscious knowledge that is required to be able to improvise. One other main message is that solo transcription in jazz improvisation education is foundational for learning to improvise. Beyond that, there appear to be three teaching and learning approaches that encompass six pedagogical orientations, and the approach chosen should be linked to the learners' preference. A blended spiral curriculum seems to fit the bill in general.

The findings from this study may be relevant to other areas of education. An improved understanding of how best to teach and learn to improvise jazz music might be relevant to education in other creative practices, particularly in fields where there is a performance component – "live art" that involves artistic spontaneous creativity and communication in the moment such as improvisational dance or comedy and interactive theatre. In addition, many educators feel that improvisation should be a part of any curriculum because the ability to improvise is such an important problem solving skill.

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Appendix A.

Concourse

This table is the entire concourse of statements that is a comprehensive expression of jazz musicians' viewpoints regarding how best to teach and learn to improvise. The concourse was amassed from a preliminary e-mail survey of 4 participants, personal workshop and course notes, jazz improvisation instructional materials such as method books and websites, and a literature review.

The statements in the concourse were modeled theoretically to sort them into categories based on recurrent themes represented. Initially 57 basic categories were identified, which were considered as sub-themes, and these were subsequently grouped into 26 main categories based on the over-arching themes depicted. One or two individual statements were then selected from each category with the intent that each statement chosen represented a unique viewpoint and yet there was a good representation of all the viewpoints in the concourse to ensure that the Q sample was in essence a mini-concourse.

The final Q sample contained 47 statements. The Q sample statements that were used in the Q sorts are indicated in green shading in the concourse table.

Statement	Sub-Theme	Theme
A musician seeking to internalize a style to the degree to which he or she can improvise in that style must develop a subconscious understanding of countless relationships that cannot possibly be articulated but must be subconsciously discovered and internalized through listening to that style (jazz)	Aural learning	Aural learning
Despite written transmissions of the basics, the process of learning to improvise remains largely an unwritten process	Aural learning	Aural learning
Encourage students to experiment with sounds and make their own compositions by ear before introducing notation	Aural learning	Aural learning
Get rid of your music books	Aural learning	Aural learning
Improvisation skill begins with listening to improvised music and learning a repertoire by ear	Aural learning	Aural learning
Instruction utilizing aural methods results in significantly greater gains in improvisation ability than instruction through notation	Aural learning	Aural learning
Listen to improvisers, and learn improvised solos by ear	Aural learning	Aural learning
Play a lick and have the students play it back by ear	Aural learning	Aural learning
Rely on your ears to remember music not notation	Aural learning	Aural learning
Theoretical knowledge is next to useless unless it is fully understood through the ears	Aural learning	Aural learning
Through models (musical examples), teachers can communicate through music what they cannot communicate through prose	Aural learning	Aural learning
Transcribe one note at a time by ear and memorize it, don't write it down	Aural learning	Aural learning
Try to imitate music vocally or on your choice of instrument	Aural learning	Aural learning
Written scores and methods undermines essential memory and aural skills required for learning to improvise	Aural learning	Aural learning
Play a duet with yourself as if you are 2 instruments - using call and response	Call & response	Call & response
Practice trading 4 bars and then 12 bars, the first person plays whatever comes into their head and the followers try to outdo that	Call & response	Call & response
Students should trade ideas and build on musical ideas while improvising in a group	Call & response	Call & response
Bring in complexity gradually when students are comfortable with simpler tasks	Curriculum order	Curriculum order
Focus on one skill at a time	Curriculum order	Curriculum order
Improvisation skills should be developed simultaneously rather than sequentially	Curriculum order	Curriculum order
Learning to improvise is a holistic process that embraces cognitive aspects other than technical and stylistic vocabulary acquisition	Curriculum order	Curriculum order
Teachers should use scaffolded improvisation instruction	Curriculum order	Curriculum order

Statement	Sub-Theme	Theme
Do ear training pitch identification and matching	Ear training	Ear training
Do ear training to learn to identify extended chords and chord progressions	Ear training	Ear training
Learning to improvise requires patience and ear-training	Ear training	Ear training
Listen and identify exercises such as intervallic recognition, melodic dictation, and transcription and chord quality recognition are useful	Ear training	Ear training
Play a chord progression on the piano and ask the students to sing the root of the perceived key centre, and other chord tones of the progression	Ear training	Ear training
Practice sight singing consecutive non-diatonic intervals to become familiar with the sound of various intervals, until you can hear them in their head	Ear training	Ear training
To meet the challenges of key transposition, students must train themselves to hear a piece's intervals, at differing pitch levels	Ear training	Ear training
Interacting as a group is essential for learning to improvise	Ensemble playing	Ensemble playing
Interaction was essential for learning to improvise	Ensemble playing	Ensemble playing
Play with others' who have similar interests with you	Ensemble playing	Ensemble playing
The best way to learn to improvise is on the band stand playing with a group	Ensemble playing	Ensemble Playing
When learning to improvise, group practicing seems very important	Ensemble playing	Ensemble playing
Young musicians develop their tune repertories largely by performing in various bands	Ensemble playing	Ensemble playing
Jam with your students	Jam with your students	Ensemble playing
Learn the ability to listen and hear what other musicians are playing while you are playing	Learn to Listen to others	Ensemble Playing
Listening to each other is the most important skill for playing jazz	Learn to Listen to others	Ensemble Playing
"How" to improvise is not explicitly taught, this ability evolves out of an internalized repertoire	Internalize jazz repertoire	Internalize jazz repertoire
A memorized repertoire of pieces and exercises provides the knowledge base of internalized elements and processes used in improvisation	Internalize jazz repertoire	Internalize jazz repertoire
Interacting with repertoire is essential for learning to improvise	Internalize jazz repertoire	Internalize jazz repertoire
Internalizing repertoire and patterned exercises through a lot of practice results in the subconscious assimilation of characteristic patterns and processes into the improviser's knowledge base	Internalize jazz repertoire	Internalize jazz repertoire
Learning a large repertoire facilitates the unconstrained invention of new melodies, rhythms and harmonies	Internalize jazz repertoire	Internalize jazz repertoire

Statement	Sub-Theme	Theme
The first step in learning how to improvise is to memorize a fixed repertoire of pieces and exercises	Internalize jazz repertoire	Internalize jazz repertoire
Improvisation is learned through working alongside masters of the art form	Apprenticeship	Learn by doing
In learning creativity, no substitute exists for a period of apprenticeship	Apprenticeship	Learn by doing
We learn by playing with people who are better than we are	Apprenticeship	Learn by doing
Confront students with genuine musical problems to solve in context	Learn by doing	Learn by doing
Jazz improvisation is learned by doing through free exploration	Learn by doing	Learn by doing
Jazz improvisation is not learned through a close technical approach, it is learned through experience	Learn by doing	Learn by doing
Jazz musicianship develops through active music-making in curricular situations that approximate the conditions of authentic jazz practices	Learn by doing	Learn by doing
Learn by doing	Learn by doing	Learn by doing
Learning involves the integration of listening, performing, improvising and composing processes	Learn by doing	Learn by doing
Play along with recordings	Play along	Learn by doing
Play along with records	Play along	Learn by doing
Playing with recorded rhythm section accompaniments allow learners to practise generating and selecting musical ideas on-the-spot in real time	Play along	Learn by doing
Practice improvising whatever you are learning in time, on a tune with some kind of accompaniment	Play along	Learn by doing
Practice with B in B, Abersold, or iReal	Play along	Learn by doing
Practice with play-along recordings	Play along	Learn by doing
Practice with records/recordings	Play along	Learn by doing
Use play along improvisational recordings	Play along	Learn by doing
Be able to play the guide tones of any tune	Guide tones	Learn chords
Practice ascending using guide tones with only 1/2 or whole step over chord changes and memorize	Guide tones	Learn chords
Practice improvising just using guide tones (3rd and 7th)	Guide tones	Learn chords
Practice singing the guide tones through a tune until you can do that easily over the changes	Guide tones	Learn chords
Add neighbour tones to the chord tones	Internalize tune chord changes	Learn chords
Know the chord changes for the tune your playing for memory	Internalize tune chord changes	Learn chords

Statement	Sub-Theme	Theme
Learn the 5ths of the chords in a tune so you can sing them	Internalize tune chord changes	Learn chords
Learn the 7th of the chord so you can sing them	Internalize tune chord changes	Learn chords
Learn the roots of the chords in a tune so that you can sing them	Internalize tune chord changes	Learn chords
Memorize the chord changes of tunes	Internalize tune chord changes	Learn chords
Record the chords 3 times through the form and sing the roots the first time through, the 5ths the second time and the 7th the 3rd time.	Internalize tune chord changes	Learn chords
Sing 1,2,3 and 3,2,1 (or 3,4,5) over each chord and then improvise using those notes	Internalize tune chord changes	Learn chords
Sing the arpeggiated chords over the chord progression	Internalize tune chord changes	Learn chords
Learn I, IV, V in all keys on the piano	Learn chord changes on the piano	Learn chords
Experiment with chords	Learn chords	Learn chords
Incorporate jazz history	Learn jazz styles	Learn jazz styles
Style must be absorbed rather than mastered through explicit instruction.	Learn jazz styles	Learn jazz styles
The jazz improviser must learn the rules of improvisation in the jazz style	Learn jazz styles	Learn jazz styles
Learn the blues scale and blues form inside and out	Learn the blues	Learn jazz styles
Practice substituting chords	Harmonic substitution	Learn jazz theory
Reharmonize a major tune with the relative minor	Harmonic substitution	Learn jazz theory
Replace V's in II-V's with bII7 = tritone sub or sub dominant	Harmonic substitution	Learn jazz theory
Use melodic minor modes over altered chords	Harmonic substitution	Learn jazz theory
Use tritone subs in diatonic tunes for interest/variety	Harmonic substitution	Learn jazz theory
Improvisation skill begins with understanding harmonic progressions	Learn jazz theory	Learn jazz theory
A knowledge base of memorized formulas and their underlying structure leaves the learner far from the ability to improvise	Learn jazz theory	Learn jazz theory
An improviser must acquire a knowledge base that includes thorough practical understanding of harmony, perfect command of all the keys, as well as memorized patterns and repertoire.	Learn jazz theory	Learn jazz theory
Avoid the natural 4 in major but use it in minor	Learn jazz theory	Learn jazz theory

Statement	Sub-Theme	Theme
Can add 1/2 step between 1 and 2, or between 2 and 3 but must add 1 or 3 to keep the chord tones on the beat	Learn jazz theory	Learn jazz theory
Diminished chord, raise top note a whole tone only if it works with the melody	Learn jazz theory	Learn jazz theory
Don't play the 9 on the III chord	Learn jazz theory	Learn jazz theory
Expert jazz improvers have developed a vast amount of textbook knowledge about western harmony, counterpoint, orchestration, composition and music history	Learn jazz theory	Learn jazz theory
Explore different starting points in diatonic harmony using modes (such as playing an Em7 arpeggio or E Phrygian scaleover a Cmaj7 chord)	Learn jazz theory	Learn jazz theory
Fill in II-V's at the end of 4 bars	Learn jazz theory	Learn jazz theory
For a bass-line in a 4/4 with chords on 1 and 3 play roots and approach tones	Learn jazz theory	Learn jazz theory
For dominant 7th play b7 and 7 in major scale to get b7 on the beat	Learn jazz theory	Learn jazz theory
For major 7th add chromatic notes between 5 and 6 on major scale (bebop scale) - keeps chord tones on the beat	Learn jazz theory	Learn jazz theory
For slow blues, slow walking bass line with chromatic approach tones, walk up minor blues scale over each root	Learn jazz theory	Learn jazz theory
For the dominant 7th chord, add the 6th and drop the 5th	Learn jazz theory	Learn jazz theory
If there is a b5, leave out the natural 5th, but if there is a #11, the chord has a 5th	Learn jazz theory	Learn jazz theory
Improving jazz musicianship does not depend on the slavish repetition of scale and chord patterns, or the memorization of verbal concepts	Learn jazz theory	Learn jazz theory
Improvise on the scale of upper structure triads	Learn jazz theory	Learn jazz theory
In dominant chords the 3rd rises to the Root, the 7th falls to the 3rd	Learn jazz theory	Learn jazz theory
Learn chord-scale relationships	Learn jazz theory	Learn jazz theory
Play ii V licks in all keys moving up a semitone	Learn jazz theory	Learn jazz theory
Reharmonize the melody using melody notes	Learn jazz theory	Learn jazz theory
Start the scale on any chord tone and the chord tones will all be on the beat	Learn jazz theory	Learn jazz theory
Teachers should highlight relationships between improvisation and related music skills	Learn jazz theory	Learn jazz theory
Think of all extensions as being inside the chord in one octave	Learn jazz theory	Learn jazz theory
Develop a thorough practical knowledge of chords, short melodies, passages, scales, arpeggio'd chords	Learn jazz theory	Learn jazz theory
Thorough practical knowledge of harmony	Learn jazz theory	Learn jazz theory
Use the whole tone scale in solos	Learn jazz theory	Learn jazz theory
Use upper structure triads as frames for melodies	Learn jazz theory	Learn jazz theory
V7 going to a minor, alter the 9 and the II chord is 1/2 diminished	Learn jazz theory	Learn jazz theory

Statement	Sub-Theme	Theme
You have to learn the rules of harmony such as preparing and resolving dominants	Learn jazz theory	Learn jazz theory
Practice chromatic scales	Chromaticism	Learn the language
Too much chromaticism is old - use sparingly	Chromaticism	Learn the language
Use chromatic approach tones and enclosures	Chromaticism	Learn the language
Use chromatic passing notes and lead tones	Chromaticism	Learn the language
practice must be “deliberate” and relevant	Deliberate Practice	Learn the language
Embellishment is good but must be meaningful	Embellishment	Learn the language
Use melodic and rhythmic embellishment	Embellishment	Learn the language
Improvisation is developed through incorporation of a knowledge base of memorized basic skills with an understanding of jazz improvisation style and embellishing and transforming all of this into an individual style through personal interpretation	Learn jazz styles	Learn the language
Use a gentle touch for ballads	Learn jazz styles	Learn the language
Examine the blues in 12 keys	Learn the blues	Learn the language
Learn blues scales in all keys	Learn the blues	Learn the language
Play components of memorized solos you like (licks) over the blues in all 12 keys	Learn the blues	Learn the language
Work on all the blues chord changes	Learn the blues	Learn the language
Work on the blues in all keys	Learn the blues	Learn the language
Analyze what the artist is doing in transcribed solos and learn how to apply those techniques	Learn the language	Learn the language
Emulate phrasing and articulation of players who's sound you like	Learn the language	Learn the language
Emulating what the greats have done is a huge part of the process of learning to improvise	Learn the language	Learn the language
Improvising is a conversation that requires learning the language little by little	Learn the language	Learn the language
Learn the language of jazz - vocabulary, rules, conventions	learn the language	Learn the language
Learn the subtleties of masterfully communicating the jazz language	learn the language	Learn the language
Memorize musical vocabulary until you own it in the same way you own the language that you speak	Learn the language	Learn the language
Reflection and attention are of scarcely any service in the moment of improvising, we must leave nearly everything to the fingers and a solid knowledge base of idiomatic options	Learn the language	Learn the language
The ability to create fully formed expressions with a musical vocabulary is learned only by hearing and imitating those fluent in the language, and by using the language in performance	Learn the language	Learn the language
Intimate, automatic familiarity with traditional licks is a springboard to the creation of a more personal approach to improvisation	Memorize licks	Learn the language

Statement	Sub-Theme	Theme
Practice playing ii V I licks over all ii V Is in a tunes	Memorize licks	Learn the language
Practice your licks over a I V vamp	Memorize licks	Learn the language
Improvisation utilizes stringing together pre-conceived material in a novel way	Memorize motifs	Learn the language
Improvisers have a repertoire of memorized motifs and utilize a system for their variation	Memorize motifs	Learn the language
In order to improvise, a knowledge base of motifs must first be internalized in long-term memory	Memorize motifs	Learn the language
Make up 2-bar motifs, sing them every day over the blues and the rhythm changes	Memorize motifs	Learn the language
Motivic development for advanced soloing	Memorize motifs	Learn the language
Rote rehearsal of motifs and chord progressions in all keys to the point where they can be performed instantly without preplanning is an essential component of learning to improvise in a style	Memorize motifs	Learn the language
Take motifs or rhythms from other players while you are soloing but don't mimic them	Memorize motifs	Learn the language
The improviser must practice motif transposition, variation, and recombination until these processes becomes somewhat automatic	Memorize motifs	Learn the language
play 8th note lines through the changes	Practice 8th note lines	Learn the language
Practice linear lines with swing 8th notes	Practice 8th note lines	Learn the language
Practice playing continuous 8th notes over a bass line	Practice 8th note lines	Learn the language
Practice playing scales/modes with non-stop 8th notes and metronome in swing feel	Practice 8th note lines	Learn the language
Practice random 8th notes over chord changes in time	Practice 8th note lines	Learn the language
Beginning students need to be free to discover the sounds they can make without rules as to what is right or wrong	Learning environment	Learning environment
Create a classroom environment that encourages musical experimentation and risk taking	Learning environment	Learning environment
Gain the confidence of your student and give them the confidence to explore their own creativity in improvisational activities	Learning environment	Learning environment
Improv education should occur in a small group learning environment	Learning environment	Learning environment
Maintain enough structure to make students comfortable and keep them focused on the task at hand	Learning environment	Learning environment
Relaxed performance settings	Learning environment	Learning environment
Teachers should be hands on and engaging	Learning environment	Learning environment
The development of jazz musicianship requires a receptive environment that encourages improvisational risk-taking	Learning environment	Learning environment
Use a teaching atmosphere balanced between disciplined practice and creative experimentation	Learning environment	Learning environment
When teaching improvisation you must provide a safe, neutral, peaceful environment where the student feels comfortable responding to and producing ideas.	Learning environment	Learning environment
Make your playing effortless	Relax	Learning environment

Statement	Sub-Theme	Theme
Relax, no effort	Relax	Learning environment
The teacher should present a set of musical elements (e.g. a motif) and then demonstrate the numerous possible permutation that can result from combining those elements in different ways	Demonstration	Listen to jazz
A significant part of learning involves listening to the improvisation of skilled performers.	Listen to jazz	Listen to jazz
Encourage your students to listen to a lot of jazz	Listen to jazz	Listen to jazz
Extensive listening to jazz is required to get the swing feel	Listen to jazz	Listen to jazz
Immersion in the jazz scene, listening to recordings and imitating past masters are key elements in an improviser's training	Listen to jazz	Listen to jazz
Learning to improvise requires a lot of listening to jazz	Listen to jazz	Listen to jazz
Listen as much as you can to this art form	Listen to jazz	Listen to jazz
Listen to other players on recordings - how they play	Listen to jazz	Listen to jazz
Listening to jazz is the most important thing to do to learn to play jazz	Listen to jazz	Listen to jazz
Listening to others' performances allows the passive assimilation of formulas and processes used in improvisation	Listen to jazz	Listen to jazz
Need to listen to get the style, not just the notes	Listen to jazz	Listen to jazz
Put together your own library of jazz recordings	Listen to jazz	Listen to jazz
The music must be internalized in all its aspects before one can improvise competently and that internalization comes about only through much listening and practice	Listen to jazz	Listen to jazz
To learn a style takes years of exposure to repertoire and improvisation in that style	Listen to jazz	Listen to jazz
To learn to create fully formed solos, fluent improvisers must be heard and imitated	Listen to jazz	Listen to jazz
Always learn the lyrics of tunes - provides rhythmic integrity as well as the melody	Learn the lyrics	Memorize jazz tunes
Learn the lyrics and the melody	Learn the lyrics	Memorize jazz tunes
Insert passing tones to the melody	Learn the melody	Memorize jazz tunes
Learn the melodies so you can sing them	Learn the melody	Memorize jazz tunes
Learn the melody of a tune accurately and vary it through augmentation, inversion, dynamics, rhythmic change	Learn the melody	Memorize jazz tunes
Learn the melody so you can sing it slow	Learn the melody	Memorize jazz tunes
Practice singing tunes initially with nonverbal or scat syllables to master the melodies aurally without relying on physical impressions such as fingering patterns or the visualization of an instrument's layout.	Learn the melody	Memorize jazz tunes
Use melody notes in a different order	Learn the melody	Memorize jazz tunes
Use the material in the melody for themes	Learn the melody	Memorize jazz tunes
Use the melody rhythm with different notes	Learn the melody	Memorize jazz tunes

Statement	Sub-Theme	Theme
When soloing, always know where you are in the melody and be able to sing it at any point	Learn the melody	Memorize jazz tunes
Always keep the melody and the form in your head	Memorize jazz tunes	Memorize jazz tunes
Always know where you are in a tune	Memorize jazz tunes	Memorize jazz tunes
Choose the tunes you want to learn	Memorize jazz tunes	Memorize jazz tunes
In addition to memorizing the melody, students should learn the bass line and the harmonic progression of tunes by ear so that they can sing and play them	Memorize jazz tunes	Memorize jazz tunes
Intimate acquaintance with the "standard" jazz tunes	Memorize jazz tunes	Memorize jazz tunes
Knowing many melodies and bass lines is an invaluable resource for improvising	Memorize jazz tunes	Memorize jazz tunes
Learn many tunes including the blues heads by heart including the chord changes and the melody	Memorize jazz tunes	Memorize jazz tunes
Learn the bass line of a tunes so you can sing them	Memorize jazz tunes	Memorize jazz tunes
Learn tunes for memory in all keys	Memorize jazz tunes	Memorize jazz tunes
Learners must become familiar with standard tunes and their frameworks before taking any liberties in playing variations or in improvising	Memorize jazz tunes	Memorize jazz tunes
Sing tonal patterns that outline the functional harmony of tunes	Memorize jazz tunes	Memorize jazz tunes
To enlarge their tune repertoire, musicians tackle representative examples of forms that present unique challenges	Memorize jazz tunes	Memorize jazz tunes
Write out lead sheets of material you want to play	write out lead sheets	Memorize jazz tunes
Learn jazz solos by ear from recordings and extract riffs from them to use as improvisation patterns	Memorize solos	Memorize solos
Learn other people's solos for memory to get ideas	Memorize solos	Memorize solos
Learn others solos you like so you can sing and play them precisely	Memorize solos	Memorize solos
Lift solos by ear and memorize them	Memorize solos	Memorize solos
Listen to and sing along with solos	Memorize solos	Memorize solos
Memorize solos of the greats and internalize their style	Memorize solos	Memorize solos
Memorize solos so you can sing them	Memorize solos	Memorize solos
Play along with solos	Memorize solos	Memorize solos
Play along with solos	Memorize solos	Memorize solos
Solo transcription is a key element to learn both vocabulary and style	Transcribe solos	Memorize solos
transcribe solos	Transcribe solos	Memorize solos
Transcribe solos and learn them	Transcribe solos	Memorize solos
Transcribe solos to embed musical ideas for improvising in your subconscious	Transcribe solos	Memorize solos

Statement	Sub-Theme	Theme
Transcribe solos you enjoy listening to	Transcribe solos	Memorize solos
Connect solo lines	Phrasing	Phrasing
Give your phrases shape	Phrasing	Phrasing
Make phrases in your solos	Phrasing	Phrasing
Practice voice leading over the bar-lines	Phrasing	Phrasing
Sustain phrases over several bars	Phrasing	Phrasing
The advanced improviser seeks continuity between ideas	Phrasing	Phrasing
Use Forward and back phrasing	Phrasing	Phrasing
Work on 2-bar phrases	Phrasing	Phrasing
Composing melodies in relation to the chord patterns of a variety of jazz standards should take a central role in teaching jazz improvisation	Practice creating melodies	Practice creating melodies
Create your own melodies in response to musical phrases	Practice creating melodies	Practice creating melodies
Play a melody you make up over the changes and repeat it with subtle changes	Practice creating melodies	Practice creating melodies
Play perfect melodies in your solos	Practice creating melodies	Practice creating melodies
Practice creating melodic lines that develop and resolve in 4 or 8 bar phrases	Practice creating melodies	Practice creating melodies
Practice improvising melodies that modulate through the chord changes of a tune	Practice creating melodies	Practice creating melodies
Repeat a little melody to make your solo melodic	Think melodically	Practice creating melodies
Need to be able to sing what you improvise before you play it	Audiation training	Practice Improvising
Sing everything you will improvise first	Audiation training	Practice Improvising
Teachers should highlight connections among audiating, improvising vocally, and improvising instrumentally	Audiation training	Practice Improvising
Tell the story in a way that convinces the audience	Emotion	Practice Improvising
Any note is OK if you resolve it	Experiment	Practice Improvising
Don't think about playing, just play	Experiment	Practice Improvising
Go back and forth between 2 chords to figure out options for improvising over that	Experiment	Practice Improvising

Statement	Sub-Theme	Theme
Learning to improvise involves purposefully trying out new, simple and often times blues vocabulary on very basic jazz songs forms	Experiment	Practice Improvising
Listen to a chord and play an idea over it	Experiment	Practice Improvising
For soloing play simple 3 or 4 bar melodies	Practice creating melodies	Practice improvising
Improvise over the recorded chord progression	Practice improvising	Practice improvising
Practice connecting musical elements together	Practice improvising	Practice improvising
Practice embellishing a melody with rhythmic and pitch variation	Practice improvising	Practice improvising
Practice improvising melodies using notes that outline the harmonic progression of a tune	Practice improvising	Practice improvising
Practice improvising over chord progressions	Practice improvising	Practice improvising
Practice improvising rhythmic and tonal patterns over bass lines and harmonic progressions	Practice improvising	Practice improvising
Practice improvising starting on any chord notes and keep chord tones on the beat	Practice improvising	Practice improvising
Practice over various turn-arounds in major and minor	Practice improvising	Practice improvising
Practice rhythmic motif development	Practice improvising	Practice improvising
practice soloing using a limited range (e.g. 10th)	Practice improvising	Practice improvising
Rehearsal of improvisation teaches the musician how to craft, call upon, and combine musical ideas in the moment.	Practice improvising	Practice improvising
Rehearsal of the act of improvisation is crucial in the development of improvisational skill	Practice improvising	Practice improvising
The performer must find by practice appropriate procedures for linking up novel combinations of action units in real-time and changing chosen aspects of them	Practice improvising	Practice improvising
Work over all the chord movements e.g. I to IV, IV to I, V to I	Practice improvising	Practice improvising
Learn all the standards in all keys	Practice in all keys	Practice in all keys
Learn II-V-I melodic patterns in all keys	Practice in all keys	Practice in all keys
Learn licks and patterns in 12 keys	Practice in all keys	Practice in all keys
Learn scale modes in all keys	Practice in all keys	Practice in all keys
Learn songs in 12 keys	Practice in all keys	Practice in all keys
Perfect command of all keys	Practice in all keys	Practice in all keys
Practice Autumn Leaves with metronome in all 12 keys by ear	Practice in all keys	Practice in all keys
practice chords in all 12 keys by semitones with metronome	Practice in all keys	Practice in all keys
Practice ideas in all 12 keys	Practice in all keys	Practice in all keys

Statement	Sub-Theme	Theme
Practice ii-V-I progressions in all keys	Practice in all keys	Practice in all keys
practice in all 12 keys	Practice in all keys	Practice in all keys
Practice material in different keys	Practice in all keys	Practice in all keys
Practice motifs, patterns and scales in all 12 keys repeatedly until they become automatic	Practice in all keys	Practice in all keys
practice running sequences and patterns in all keys with a metronome	Practice in all keys	Practice in all keys
Practice themes in all keys and over chord changes	Practice in all keys	Practice in all keys
Transpose transcribed solos to all 12 keys and learn this for memory	Practice in all keys	Practice in all keys
Altered drills play 4ths up/down whole steps or 3rds in the scale	Practice patterns	Practice patterns
It is necessary to develop a stockpile of musical patterns in relation to the harmonic structure of the blues and jazz standards	Practice patterns	Practice patterns
Know all scales and arpeggios by memory	Practice patterns	Practice patterns
Loop simple patterns over the changes	Practice patterns	Practice patterns
Make a pattern out of the scale/mode	Practice patterns	Practice patterns
Memorize patterns (riffs) and practice playing them over chord patterns such as ii-V-I's	Practice patterns	Practice patterns
Practice 1,2,3,5 arpeggios over down-stepping base-line using tri-tone subs	Practice patterns	Practice patterns
practice 8th note patterns	Practice patterns	Practice patterns
Practice arpeggio patterns over the chord changes	Practice patterns	Practice patterns
Practice connecting arpeggios in all inversions over the chord changes until you can play them without thinking about it	Practice patterns	Practice patterns
Practice each type of chord all ways - arpeggiate the notes in all directions - down up, up down, middle out - fast in all keys	Practice patterns	Practice patterns
Practice interval patterns	Practice patterns	Practice patterns
Practice patterns using scale tones (3rds, 4ths etc.)	Practice patterns	Practice patterns
Isolate problem areas in tunes and practice that	Practice things you're not good at	Practice things you're not good at
Practice rough parts with a metronome	Practice things you're not good at	Practice things you're not good at
Spend more time with things you have most difficulty with	Practice things you're not good at	Practice things you're not good at
divide up the tune and play each section repeatedly	Repetition	Repetition
Excellent facility and rapidity of fingering	Repetition	Repetition
Highly expert performance typically reflects extreme adaptations, achieved through decades of effort, to a quite specific constellation of task requirements	Repetition	Repetition

Statement	Sub-Theme	Theme
Learning to improvise requires a lot of rehearsing musical ideas repeatedly	Repetition	Repetition
Play one bar at a time over and over	Repetition	Repetition
Use repetition	Repetition	Repetition
You need to learn basic progressions and riffs and ways to handle virtuoso fast passages through repeated practice until they become automated/subconscious	Repetition	Repetition
Keep a practice journal	log your practice	Self-directed learning
Record your lessons	Record your lessons	Self-directed learning
Record yourself performing	record yourself	Self-directed learning
Arrive at lessons with questions and material you've been working on	Self reflection	Self-directed learning
Get behind yourself and watch yourself	Self reflection	Self-directed learning
Help students to acquire a learning-to-be creative disposition by guiding and encouraging students to reflect in, on, and about the originality, significance and creative promise of the musical ideas they generate and select	Self reflection	Self-directed learning
The student's perspective is crucial to learning	Self reflection	Self-directed learning
Allow students to find their own answers instead of telling them	Self-directed learning	Self-directed learning
Get perspectives and ideas from several different teachers	Self-directed learning	Self-directed learning
Improvisation is not a product to be taught in a strict methodological manner, but is a process to be encouraged	Self-directed learning	Self-directed learning
Provide guidance to students' learning rather than instruction	Self-directed learning	Self-directed learning
The music educator's role in teaching improvisation is principally one of mentoring, coaching and modelling	Self-directed learning	Self-directed learning
When teaching improvisation, most of the work is up to the students themselves, because they have to develop their personal improvisational style	Self-directed learning	Self-directed learning
Change style on the bridge or in each section of the form	Solo planning	Solo planning
Chord notes are destination notes	Solo planning	Solo planning
Connect the phrases in your solos so the next phrase is relevant to the previous one	Solo planning	Solo planning
For learning to improvise think: visualize, play, repeat	Solo planning	Solo planning
Ideas must be melodic, harmonic, rhythmic and consider the bass line	Solo planning	Solo planning
Improvisation requires a balance between structure and creativity	Solo planning	Solo planning
In fast tunes play all the beats, use chromatics and bebop scale	Solo planning	Solo planning
Insert ii-V sequences before cadence points or key changes in a tune	Solo planning	Solo planning
Keep the focus, don't interrupt the flow	Solo planning	Solo planning

Statement	Sub-Theme	Theme
Leave spaces	Solo planning	Solo planning
Leave spaces in your solos	Solo planning	Solo planning
Most jazz improvisations follow a theme and variation structure	Solo planning	Solo planning
Phrase the entire song - know where you're going when you start, see the finish line	Solo planning	Solo planning
Songs have a long arc from start to finish - stay with it and tell the story from start to finish	Solo planning	Solo planning
Space is good	Solo planning	Solo planning
Think 4 bars ahead at a time to form melodic lines over that	Solo planning	Solo planning
Think about what register you want to solo in	Solo planning	Solo planning
Use bebop lines for soloing	Solo planning	Solo planning
Use chord tones for improvising	Solo planning	Solo planning
Use one or two ideas in each solo	Solo planning	Solo planning
When improvising rephrase the melody	Solo planning	Solo planning
Improvisation skill begins with taking the risks necessary to improvise	Take risks	Take risks
Jazz improvisation involves risk taking	Take risks	Take risks
Take chances, push your limits, create something new, don't just play the same old licks	Take risks	Take risks
Don't play on beat one	Swing feel	Time feel
For swing snap on 2 and 4	Swing feel	Time feel
Hang your accents/emphasis on 2 and 4, not 1 and 3	Swing feel	Time feel
practice scales with the accent on the off-beat	Swing feel	Time feel
Practice with a metronome set on triplets for swing feel	Swing feel	Time feel
There are 12 points to play in a bar of 4/4 swing	Swing feel	Time feel
Use a down stepping base-line to add forward motion	Swing feel	Time feel
Ballads have a quarter note feel that drives the song - don't double up (don't play 8ths)	Time feel	Time feel
Change the rhythms	Time feel	Time feel
Chant rhythmic patterns to develop an understanding of playing any rhythm, in any meter, at any tempo	Time feel	Time feel
Good time feel is imperative	Time feel	Time feel
In 3/4 the accent is on 1	Time feel	Time feel
Keep the rhythm going always	Time feel	Time feel
Make rhythmic phrases	Time feel	Time feel

Statement	Sub-Theme	Theme
Play a tune with metronome on half notes	Time feel	Time feel
Play patterns in all keys with a metronome	Time feel	Time feel
Practice material in different time signatures	Time feel	Time feel
Practice sight reading with a metronome	Time feel	Time feel
Practice with a metronome	Time feel	Time feel
Practice with the metronome on 2 and 4	Time feel	Time feel
Start slow with a metronome and gradually speed up	Time feel	Time feel
There is a somewhat indefinable rhythmic energy that drives and infuses the music, carrying it forward even at slower tempos	Time feel	Time feel
Transcribe comping rhythms	Time feel	Time feel
Translate metric subdivisions into syllabic equivalents and repeat them verbally to promote internalizing compound meters	Time feel	Time feel
Try rhythmic things and repeat them	Time feel	Time feel
Use straight 8ths for rock and Latin	Time feel	Time feel

Appendix B.

Factor Q Sorts (Factor Arrays)

The PQMethod (Schmolk, 2014) software compiled a representative or optimal Q sort for each of the factors. These representative Q sorts are called factor arrays and provide the weighted importance of each statement in the optimal Q sort. The factor array is essentially the viewpoint of the factor – as if that factor had sorted the Q sample of statements into a Q sort.

The Pragmatic Emulator Q Sort (Factor 1 Array)

-5	-4	-3	-2	-1	0	1	2	3	4	5
Write out lead sheets of material you want to play	"How" to improvise is not explicitly taught, this ability evolves out of an internalized repertoire	Improvisation skills should be developed simultaneously rather than sequentially	The best way to learn to improvise is on the band stand playing with a group	Students should trade ideas and build on musical ideas while improvising in a group	Jazz musicianship develops through active music-making in curricular situations that approximate the conditions of authentic jazz practices	Practice improvising whatever you are learning in time, on a tune with some kind of accompaniment	Instruction utilizing aural methods results in significantly greater gains in improvisation ability than instruction through notation	Learn the ability to listen and hear what other musicians are playing while you are playing	Be able to play the guide tones of any tune	Emulating what the greats have done is a huge part of the process of learning to improvise
Don't think about playing, just play	Practice playing continuous 8th notes over a bass line	Embellishment is good but must be meaningful	The jazz improviser must learn the rules of improvisation in the jazz style	Improvisation is learned through working alongside masters of the art form	Use chromatic approach tones and enclosures	Memorize musical vocabulary until you own it in the same way you own the language that you speak	Listen and identify exercises such as interval recognition, melodic dictation, and chord quality recognition are useful	Develop a thorough practical knowledge of chords, short melodies, passages, scales, arpeggiated chords	Know the chord changes for the tune you're playing for memory	A significant part of learning involves listening to the improvisation of skilled performers.
	Learn all the standards in all keys	Beginning students need to be free to discover the sounds they can make without rules as to what is right or wrong	Teachers should highlight relationships between improvisation and related music skills	Learn chord-scale relationships	Examine the blues in 12 keys	Improvisation utilizes stringing together pre-conceived material in a novel way	When soloing, always know where you are in the melody and be able to sing it at any point	Memorize patterns (riffs) and practice playing them over chord patterns such as ii-V-I's	Solo transcription is a key element to learn both vocabulary and style	
		Phrase the entire song - know where you're going when you start, see the finish line	Always learn the lyrics of tunes as well as the melody	Need to be able to sing what you improvise before you play it	Knowing many melodies and bass lines is an invaluable resource for improvising	The development of jazz musicianship requires a receptive environment that encourages improvisational risk-taking	Make phrases in your solos	Practice with a metronome		
			Use one or two ideas in each solo	Improvisation skill begins with taking the risks necessary to improvise	Tell the story in a way that convinces the audience	Practice improvising melodies that modulate through the chord changes of a tune	When improvising rephrase the melody			
				Hang your accents/emphasis on 2 and 4, not 1 and 3	Rehearsal of improvisation teaches the musician how to craft, call upon, and combine musical ideas in the moment.	Spend more time with things you have most difficulty with				
					Practice motifs, patterns and scales in all 12 keys repeatedly until they become automatic					

Listen and Just Play Q Sort (Factor 2 Array)

-5	-4	-3	-2	-1	0	1	2	3	4	5
Hang your accents/emphasis on 2 and 4, not 1 and 3	Improvisation utilizes stringing together pre-conceived material in a novel way	Memorize patterns (riffs) and practice playing them over chord patterns such as ii-V-I's	Use chromatic approach tones and enclosures	Develop a thorough practical knowledge of chords, short melodies, passages, scales, arpeggiated chords	Be able to play the guide tones of any tune	Know the chord changes for the tune you're playing for memory	Instruction utilizing aural methods results in significantly greater gains in improvisation ability than instruction through notation	Emulating what the greats have done is a huge part of the process of learning to improvise	Learn the ability to listen and hear what other musicians are playing while you are playing	A significant part of learning involves listening to the improvisation of skilled performers.
Practice playing continuous 8th notes over a bass line	Knowing many melodies and bass lines is an invaluable resource for improvising	Always learn the lyrics of tunes as well as the melody	Examine the blues in 12 keys	Practice improvising whatever you are learning in time, on a tune with some kind of accompaniment	Solo transcription is a key element to learn both vocabulary and style	When improvising rephrase the melody	When soloing, always know where you are in the melody and be able to sing it at any point	Make phrases in your solos	The development of jazz musicianship requires a receptive environment that encourages improvisational risk-taking	Improvisation skill begins with taking the risks necessary to improvise
	Write out lead sheets of material you want to play	Embellishment is good but must be meaningful	Practice motifs, patterns and scales in all 12 keys repeatedly until they become automatic	Spend more time with things you have most difficulty with	Practice with a metronome	Rehearsal of improvisation teaches the musician how to craft, call upon, and combine musical ideas in the moment.	Memorize musical vocabulary until you own it in the same way you own the language that you speak	Jazz musicianship develops through active music-making in curricular situations that approximate the conditions of authentic jazz practices	Improvisation is learned through working alongside masters of the art form	
		Learn all the standards in all keys	Teachers should highlight relationships between improvisation and related music skills	Tell the story in a way that convinces the audience	Listen and identify exercises such as interval recognition, melodic dictation, and chord quality recognition are useful	Learn chord-scale relationships	Students should trade ideas and build on musical ideas while improvising in a group	Beginning students need to be free to discover the sounds they can make without rules as to what is right or wrong		
			Improvisation skills should be developed simultaneously rather than sequentially	Use one or two ideas in each solo	Practice improvising melodies that modulate through the chord changes of a tune	The best way to learn to improvise is on the band stand playing with a group	Need to be able to sing what you improvise before you play it			
				Phrase the entire song - know where you're going when you start, see the finish line	The jazz improviser must learn the rules of improvisation in the jazz style	Don't think about playing, just play				
					"How" to improvise is not explicitly taught, this ability evolves out of an internalized repertoire					

The Jazz Communicator Q Sort (Factor 3 Array)

-5	-4	-3	-2	-1	0	1	2	3	4	5
The jazz improviser must learn the rules of improvisation in the jazz style	Jazz musicianship develops through active music-making in curricular situations that approximate the conditions of authentic jazz practices	The development of jazz musicianship requires a receptive environment that encourages improvisational risk-taking	Beginning students need to be free to discover the sounds they can make without rules as to what is right or wrong	Improvisation skill begins with taking the risks necessary to improvise	Be able to play the guide tones of any tune	Learn the ability to listen and hear what other musicians are playing while you are playing	Make phrases in your solos	A significant part of learning involves listening to the improvisation of skilled performers.	Emulating what the greats have done is a huge part of the process of learning to improvise	Tell the story in a way that convinces the audience
Improvisation skills should be developed simultaneously rather than sequentially	Rehearsal of improvisation teaches the musician how to craft, call upon, and combine musical ideas in the moment.	Teachers should highlight relationships between improvisation and related music skills	Instruction utilizing aural methods results in significantly greater gains in improvisation ability than instruction through notation	Learn chord-scale relationships	Listen and identify exercises such as interval recognition, melodic dictation, and chord quality recognition are useful	When improvising rephrase the melody	When soloing, always know where you are in the melody and be able to sing it at any point	Improvisation is learned through working alongside masters of the art form	Know the chord changes for the tune you're playing for memory	
	Use one or two ideas in each solo	Write out lead sheets of material you want to play	"How" to improvise is not explicitly taught, this ability evolves out of an internalized repertoire	Practice improvising whatever you are learning in time, on a tune with some kind of accompaniment	Use chromatic approach tones and enclosures	The best way to learn to improvise is on the band stand playing with a group	Students should trade ideas and build on musical ideas while improvising in a group	Memorize musical vocabulary until you own it in the same way you own the language that you speak	Don't think about playing, just play	
	Improvisation utilizes stringing together pre-conceived material in a novel way		Develop a thorough practical knowledge of chords, short melodies, passages, scales, arpeggiated chords	Examine the blues in 12 keys	Memorize patterns (riffs) and practice playing them over chord patterns such as ii-V-I's	Practice improvising melodies that modulate through the chord changes of a tune	Need to be able to sing what you improvise before you play it	Solo transcription is a key element to learn both vocabulary and style	Practice with a metronome	
			Hang your accents/emphasis on 2 and 4, not 1 and 3	Practice motifs, patterns and scales in all 12 keys repeatedly until they become automatic	Always learn the lyrics of tunes as well as the melody	Phrase the entire song - know where you're going when you start, see the finish line	Spend more time with things you have most difficulty with			
				Knowing many melodies and bass lines is an invaluable resource for improvising	Learn all the standards in all keys	Embellishment is good but must be meaningful				
					Practice playing continuous 8th notes over a bass line					