

Teaching Music Literacy with the Brain in Mind

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The Child Voice

**Working with Young Voices:
Practical Applications and Theory
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Introduction - Rationale

"Without literacy today there can no more be a musical culture than there can be a literary one. Thus the promotion of musical literacy is as pressing now as was the promotion of linguistic literacy between one and two hundred years ago. In 1690 the idea that everybody could learn to read and write their own language was at least as bold as the idea today that everybody should learn to read music." (Kodaly)

"It may be wondered why music literacy is considered important. Some general music teachers consider the ability to read and write music to be unimportant. They reason that the majority of students in the schools will take music as an avocation and not as a profession and thus need not be musically literate... Teachers who are opposed to music literacy claim that it takes too much time to teach. Even with unlimited time, students will not learn to be musically literate if they are taught to define symbols before they are taught to audiate the patterns that the symbols represent." (Gordon)

This session will present information on how most human beings learn; and the application of that information to the teaching of aural and notational music literacy. Included are numerous examples intended to demonstrate what various techniques "look like" in class and/or rehearsal. Included will be a set of principles which should be the foundation of a comprehensive music education. While there may not be agreement on goals and methods of music literacy, two key aspects of my personal philosophy of music education are, 1) all children have a right to learn to read music, and 2) maximizing the potential of all children is of the highest importance.

I. Research on how the brain learns

In his book *How the Mind Works*, MIT professor Steven Pinker begins his preface with the following caveat: "First, we don't understand how the mind works..."

Brain Basics

Scientists do know that cells called neurons communicate with each other through synapses; that neurotransmitters ("messenger molecules") are the chemicals which communicate not only in the brain but throughout the entire body; that we are born with more neurons than we can use and that a process of "pruning" occurs (use it or lose it); that this process as well as the number of connections that are made are influenced by both genes and the environment. (Some researchers say the distribution of influence between nature vs. nurture is about 50/50.)

"For each intelligence to function, a network of neurological fibers must develop which will allow for the processing of specific types of thinking. That network consists of cells, fiber-like extensions from those cells called axons, and still more fibrous extensions from the ends of the axons called dendrites. Each set of dendrites will need to grow close enough to another set of dendrites to allow the electrical impulses of thought to leap from one set of dendrites to another set of dendrites through electrically conducive fluid. These areas of dendritic associations are known as synaptic connections." (Feierabend)

"Initially, the nervous system produces a great excess of neuronal fibers; a significant portion of the development process involves the pruning or atrophy of the excessive connections which do not appear to be necessary..." (Gardner)

"The strength and efficiency of synaptic connections determine the speed and power with which your brain functions. The most important news about synapses is that they are formed, strengthened and maintained by interaction with experience." (Healy)

Excerpts from two articles in **Educational Leadership/September 2004**
Teaching for Meaning

The Art of Changing the Brain

James E. Zull

"Learning produces physical changes in the brain.... We talk about the brain being "plastic," meaning that the brain changes its own wiring, perhaps almost continuously. Our wiring grows and develops depending on what we experience – even before birth. The extensive plasticity of the brain continues throughout life.

"What causes the changes that take place in the brain? This question has two answers, both of which are essential to understanding the art of changing the brain. Practice and emotion. When we practice something, the neurons that control and drive that action fire repeatedly."

"Synapses convert the isolated neurons into a network of neurons. These networks are the physical equivalent of knowledge, and the change in the connections that make up the networks is learning."

"My examination of brain research has made me think seriously about giving up on explaining as a teaching tool. When I began to understand knowledge as consisting of networks of neurons, it dawned on me – powerfully – that my students' knowledge was actually physically different than my own. When I explained biochemistry, I had to use my own networks; and for my students to understand it, they had to use theirs."

To See Beyond the Lesson

Jacqueline Grennon Brooks

"Searching for meaning is the purpose of learning, so teaching for meaning is the purpose of teaching. If teachers do not have meaning at the core of their pedagogy and practice, then let's not call the activity teaching. Doing so demeans the noble art and science it represents. Teaching is a complicated process, and it is imperative that we stop trying to make it appear simple. Teaching for meaning requires the teacher to become a mediator of thinking. Teachers are increasingly realizing that engagement coupled with student understanding is key to student learning."

"The newly emerging neuropsychological brain mapping studies – still in their infancy in terms of potential applicability to education settings – are adding compelling biological evidence to behavioral observations. Empirical research supports a number of broad areas that guide pedagogy and align with constructivist learning theory."

"Teachers who teach for meaning also make time for wonder. Living means perpetually searching for meaning. Schools need to be places that keep this search alive."

Making Connections: Teaching and the Human Brain

Excerpts from *Making Connections: Teaching and the Human Brain* by Renate Nummela Caine & Geoffrey Caine and *12 Brain/Mind Learning Principles in Action*:

"The overwhelming need of learners is for meaningfulness. The main distinction is between surface knowledge and meaningful knowledge. The former, involving memorization of facts and procedures, is what education traditionally produces. Meaningful knowledge, on the other hand, is anything that makes sense to the learner. Understanding a subject results from perceiving relationships. The brain is designed as a pattern detector. Our function as educators is to provide our students with the sorts of experiences that enable them to perceive the 'patterns that connect.'

"Brain based education involves:

1. Designing and orchestrating lifelike, enriching, and appropriate experience for learners.
2. Ensuring that students process experience in such a way as to increase the extraction of meaning."

Caine & Caine propose "twelve principles" and "three fundamental components or elements of great teaching." The three fundamental components are:

Relaxed Alertness

"Relaxed alertness focuses on the emotional climate of the classroom. Relaxed alertness is the optimal state of mind for meaningful learning. People in a state of relaxed alertness experience low threat and high challenge. Essentially, the learner is both relaxed and to some extent excited or emotionally engaged at the same time. This is the foundation for taking risks in thinking, questioning, and experimenting, all of which are essential to mastering new skills and engaging the executive functions (housed in the pre-frontal cortex, such functions as the ability to plan and organize thinking, engage in risk assessment, multitask, moderate emotions, think critically, etc.). In this state the learner feels competent and confident and has a sense of meaning or purpose."

Orchestrated Immersion

"Orchestrated immersion focuses on instruction." The full section title is: "Orchestrated immersion in complex experience: creating optimal opportunities for learning." "All the ingredients of complex experience are already operative in life and always color the content of any learning environment. Students are perceiving, feeling, relating and processing all the time.... Because the learner is constantly searching for connections on many levels, educators need to orchestrate the experience from which learners extract understanding. The primary focus should be on expanding the quantity and quality of ways in which a learner is exposed to content and context."

"The first foundational skill for orchestrated immersion is designing teacher-orchestrated global experiences. Global experiences are defined as psychologically rich beginning events that evoke an impression of the 'whole' subject to be explored and engage the students in several simultaneous ways. They help students get a feel, or felt meaning, for the subject or topic. (Caine & Caine define felt meaning as an unarticulated sense of relationship that culminates in the 'aha!' of insight.)"

"The generic fundamentals for immersion in complex experience are the following:

1. A context rich in resources of all kinds.
2. Modeling and guidance, with authentic examples of expert work.
3. Complexity that exposes students to, and requires their participation in, both basic and sophisticated performance."

Active Processing

"Active processing focuses on creating optimal ways to consolidate learning. Active processing is the art of digesting, thinking about, reflecting on, and making sense of experience and of consolidating learning. It ranges from systemic practice and creative rehearsal (for memorization) to the deeply probing and ongoing questions that test the limits of a learner's abilities. One reason some experiential teaching does not work is because people do not automatically learn everything they need to know just by having an experience, no matter how well crafted. The way to develop dynamic memory is to embed necessary skills and ideas in well-designed experiences and then to mine the experiences for the lessons and essential skills they offer. There are several different ways to approach active processing. Practice and rehearsal – there are many occasions when rote recall is needed. Observations and questions – to gain more information and make sense of things. Reflection or self-regulation."

Within these three fundamental components are twelve learning principles.

Relaxed alertness includes the following principles:

- Complex learning is enhanced by challenge and inhibited by threat associated with helplessness and fatigue.
- The brain/mind is social.
- The search for meaning is innate.
- Emotions are critical to patterning.

Orchestrated Immersion includes the following principles:

- The brain/mind processes parts and wholes simultaneously.
- All learning engages the physiology.
- The search for meaning occurs through patterning.
- Learning is developmental.

Active Processing includes the following principles:

- There are at least two approaches to memory. One is to store or archive isolated facts, skills, and procedures. The other is to simultaneously engage multiple systems in order to make sense of experience.
- Learning involves both focused attention and peripheral perception.
- Learning is both conscious and unconscious.
- Each brain is uniquely organized.

"The search for meaning and the consequential need to act on our environment are automatic, survival oriented, and basic to the human brain. The mind/brain innately seeks to make connections. We are, therefore, born to learn.

"The need to make sense of things is characteristic of every human being from infancy to adulthood. **At the core of meaning is a sense of relatedness.** When people finally make sense of new ideas or a new situation or new skills, the old connects with the new. Meaning is essential for real mastery. Clearly there are skills and facts that need to be memorized. However, when skills and facts are taught in the course of solving more complex problems or the need to deal effectively with more realistic situations, the learning is richer.

"A preliminary definition of meaningful learning refers to the storage of items (in memory systems) that have so many connections, and are of such quality, that they can be accessed appropriately in unexpected contexts.

"It is useful to think of meaning as consisting of three basic elements: making connections, purpose and understanding. Making connections refers to seeing how new ideas, skills and experiences are related to what we currently know or believe. Creative insight and a "sense" of what is meant" are what "we call felt meaning – the "aha" sensation. Purpose relates to what a person values. One of the great benefits of engaging learners' own purposes is that they become more energized and motivated. Understanding happens when information is synthesized and new ideas or concepts are mastered in a way that allows for a shift in perception." Other aspects of meaning include novelty, dissonance and valuing.

"All human beings are driven by a need to identify, name, and organize the configuration of elements – or patterns – that make up their known world. Patterning refers to the meaningful organization and categorization of information. Education is about increasing the patterns students can use, recognize and communicate. All students increase learning when new patterns are linked to what they already understand."

"Piaget was spelling out the same general principle when he distinguished between assimilation, by which he meant the way in which whatever is perceived is made to 'fit' into a person's worldview, and accommodation, by which he meant that a person's worldview or internal world needs to adapt to what is perceived. All deeper understanding requires a grasp of the essential concepts of a subject or discipline."

"Running in tandem with the development of body, brain and mind is the fact that ideas and skills are also mastered developmentally. One implication is that all subject areas need scaffolding so that students can continually build upon what has been learned or experienced before."

"The interconnectedness of concepts and emotions should be expected, given the fact that the limbic system mediates both emotion and memory. Memory is impossible without emotion of some kind; emotion energizes memory. To teach someone any subject adequately, the subject must be embedded in all the elements that give it meaning. Our emotions are integral to learning."

Motivation and Emotions

"We must point out that just as emotions are critical to learning, learning and the expansion of knowledge are critical in forming positive emotions. Focusing on feelings without regard to performance, creativity, and intellectual understanding is inefficient and as cumbersome from the point of view of the brain as ignoring the emotional impact of the learning experience. This is one of the major fallacies underlying self-concept improvement programs that focus heavily on making children feel better about themselves without tying such feelings to performance and genuine shifts in knowledge. The optimal state of mind for meaningful learning rests on an emotional foundation, and the best foundation includes competence and confidence."

Downshifting, a term coined by Leslie Hart in his book *Human Brain and Human Learning* (1983), has been defined by the Caines as "the psychophysiological response to threat that is accompanied by a sense of helplessness or fatigue." It involves a "narrowing of the perceptual field" in which "we are literally shifting down from the neocortex into the older, more automatic limbic system and reptilian complex (the triune brain).

"Downshifting appears to affect many higher-order cognitive functions of the brain and thus can prevent us from learning and generating solutions for new problems. We also become much more attentive to reinforcement by others through rewards and punishment. In effect, we *prefer* external forms of motivation and lose sight of intrinsic motivation.

"Behaviorism is largely based on rewards and punishments; but these are extremely complex, not simple. A smiley sticker is not just a single reward for a single act. The use of a sticker may well influence the formation of expectations, preferences, and habits having an impact far beyond any single event. Thus, a single teacher behavior may have vast, but initially invisible, consequences.

"When rewards and punishments are controlled by others, most children are influenced to look to others for direction and answers. In fact, we now seem to have an entire generation working for the grade or rewards of an immediate and tangible nature. One consequence is that they are literally *demotivated* in many respects. In particular, their innate search for meaning is short-circuited. Another consequence is that they are actually deprived of some major awards, namely the joy and excitement that are the consequences of real learning."

"The evidence indicates that learning is fostered by creativity and challenge. These factors together constitute intrinsic motivation. The search for meaning is at the heart of intrinsic motivation." [See also: *Punished by Rewards: The Trouble with Gold Stars, Incentive Plans, A's, Praise, and Other Bribes* by Alfie Kohn, 1993]

Representations

Excerpts from *The Disciplined Mind* by Howard Gardner.

"The key notion of the cognitive revolution is "mental representation." Cognitive psychologists believe that individuals have ideas, images, and various "languages" in their mind-brain; these representations are real and important, and they are susceptible to study by scientists and to change by educators.

"According to my analysis, all human beings possess at least eight quite separate forms of intelligence. Each intelligence reflects the potential to solve problems or to fashion products that are valued in one or more cultural settings. Each of these intelligences feature its own distinctive form of mental representation; in fact, it is equally accurate to say that each intelligence *is* a form of mental representation."

The Language Analogy

There is an obvious analogy, although it is not precise, between the language learning model and that of music literacy. The key principle of language acquisition is: "Sound before sight."

"In learning to speak, children first listen. From the time of birth, and even before, they are surrounded by the sounds of language. They absorb these sounds and become attuned to the language of their culture. Soon after, children begin to *imitate*. They receive much praise and are encouraged to "babble," even when their sounds do not make sense to adult listeners. Then they begin to *think* in the language. Words and phrases start to have meaning to them. Next, children *improvise* in the language. They make up their own phrases and sentences that are organized in a logical manner. They can engage in *conversation*. Finally, after several years of developing their ability to *think* and *speak*, children are taught how to read and write. Only after all these skills are well in place is grammar, the theory of sentence construction, introduced." (Gordon Institute for Music Learning)

II. Application of "brain-compatible learning" principles to the teaching of music literacy

Teaching for Musical Understanding

Excerpts from *Teaching for Musical Understanding* by Jackie Wiggins.

"Howard Gardner (Project Zero) suggests that what schools need to be about is "education for understanding." Gardner defines understanding as the capacity to use current knowledge, concepts and skills to illuminate new problems or unanticipated issues."

"First, it is important to explain this perspective - that students must indeed formulate their own understandings. The mainstream ideas espoused as best practice in today's schools are rooted in a constructivist vision of learning and teaching, namely, that in order to learn, people *construct* their own understanding of experiences. If people learn by constructing their own understanding of their experiences, then teaching is essentially a process of designing experiences and providing support for learners as they actively and interactively engage in those experiences. Engaging in music involves three processes: performing, listening and creating. Music learning is the ability to apply musical understanding to musical process."

"Best practice in music education should draw upon the most central and authentic conceptions of music and learning. This has not always been the case. There are practices in music education that we might call "folk practices" because they are rooted in a long line of tradition, but not necessarily in the essence of music or sound teaching practice. Some of this folk mentality lingers in contemporary classrooms in spite of what the field of education can teach us about the nature of learning and teaching. As a profession, we should be sure we know about the most cutting-edge ideas in both music and education to ensure that we are offering our students the most authentic learning experiences possible."

What constitutes meaning in music?

In considering how to apply the information above for this workshop, two principles from Caine and Caine will have direct application: (1) The search for meaning is innate, (2) The search for meaning occurs through patterning.

Two key questions are: What constitutes meaning in music, and, how do we design and orchestrate "lifelike, enriching, and appropriate experiences for learners" which ensure "that students process experience in such a way as to increase the extraction of meaning?"

Music exists aurally. "In order to formally understand music, one must be aware of its basic aural elements, which are a sense of tonality and a sense of meter." (Gordon)

"Describing exactly what music intelligence is and determining how to measure it have been debated for over a century. Most recently, Edwin Gordon has suggested that music intelligence is determined by one's ability to "think" music, or in his words to "audiate" music. The better one is in hearing and creating music inside one's head, the better developed is one's potential to succeed in real musical understanding and appreciation." (Feierabend)

"Musical ideas are not verbal ideas about music. Musical ideas are the ways we hold musical sounds in our minds. Musical thinking is thinking in sound, just as verbal thinking is thinking in words." (Wiggins)

"Audiation is the foundation of musicianship. It takes place when we hear and comprehend music for which the sound is no longer or may never have been present." (GIML)

In Kodaly practice this skill is referred to as "inner hearing." "Of all musical skills, inner hearing is perhaps the most important. One cannot produce a musical sound [with understanding] without first thinking that sound." (Choksy)

"Audiation provides the immediate readiness for the development of notational audiation, that is, music literacy. In order to read and write music in a meaningful way, a student must be able to audiate music seen in notational form without it being performed, and to audiate what he is composing. The mere ability to name and define mechanically individual notes and other music symbols does not provide for the readiness for music literacy." (Gordon)

"To develop music intelligence, one must develop neuronal pathways for musical thinking early in life. Learning "about" music uses logical/mathematical or linguistic intelligence, while singing and moving with music use and develop music intelligence." (Feierabend)

"Individual notes have no meaning except as a student takes meaning from them. Just as a student reads words, groupings of letters, in a language, so he reads patterns, groupings of notes, both tonally and rhythmically, in music. Tonal patterns and rhythm patterns, not individual tones or notes, are the basic units of music." (Gordon)

This I Believe:

"All deeper understanding requires a grasp of the essential concepts of a subject or discipline." (Caine) The elements of music – rhythm, melody, harmony, form, timbre, dynamics, style and texture – represent the essential concepts (mental representations) of music. The goal of teaching for meaning in music is to develop the ability to audiate (with meaning or understanding) while being actively involved in the three artistic processes: creating, performing and responding. "Music education should empower students to create, refine and notate their own original music; read, interpret and perform music literature created by themselves and others; and respond with understanding to others' musical works and performances." (CT Guide to the Arts)

The Language Analogy

The key principle of language acquisition, "Sound before sight" is also the key principle of music literacy. This principle was adapted to music education from the theories of Pestalozzi by Lowell Mason in 1830's (although I would surmise that master teachers have been aware of this since the invention of music notation). There are an infinite number of implications for music education in this three-word principle. In order to be able to read music with understanding (bringing meaning to symbols) we must be able to make meaningful connections to our well-established understanding of the aural elements of music. Numerous language acquisition theorists have stated that the brain is predisposed (a.k.a. "hard-wired") for aural/spoken language but that written language is, to some degree, less so (if not at all). The same may be said of music – we are predisposed to singing and moving, but reading music notation is a very different process.

The first task of music educators, at whatever level, is to teach our students the aural elements of music. We must have a firm foundation in the aural understanding of music to bring meaning to the written symbol system. **Sound before sight!**

In music we approach sound in much the same way that we do in language arts, through authentic repertoire. The principles are analogous to current practices in the language arts which focus on comprehension.

Orchestrated Immersion

As a music educator, the phrase "orchestrate the experience" has great resonance. Historically, one key factor which has made music classes and musical ensembles so compelling for so many students is that through their participation they are engaging in authentic experience.

Since the mind/brain innately seeks to make connections and a sense of relatedness is at the core of meaning, the task of the teacher is to orchestrate "lifelike, enriching, and appropriate experiences for learners" which ensure "that students process experience in such a way as to increase the extraction of meaning." To provide the opportunity for students to construct their own neural networks which provide scaffolding so that students can continually build upon what has been learned or experienced before, a sequential approach similar to the language model is required.

A sequential approach

The approach of John Feierabend is in accord with the principles mentioned above. His method, "Conversational Solfege," combines the best practices of the approaches to music associated with Edwin Gordon and Zoltan Kodaly. (See appendix.)

In his book, **Learning Sequences in Music**, Gordon identifies a skill learning sequence, as well as a tonal content learning sequence and a rhythm content learning sequence. The skill learning sequence represents how and in what progression we learn, and the content learning sequences represent what we learn (melodic and rhythmic solfege).

Below is an outline of "Conversational Solfege" which is very similar to the skill learning sequence of Gordon. (The outline structure has been added.)

I. Readiness

A. Rote

II. Conversational Solfege

A. Rote

B. Decode

1. Familiar

2. Unfamiliar

C. Create

III. Reading

A. Rote

B. Decode

1. Familiar

2. Unfamiliar

IV. Writing

A. Rote

B. Decode

1. Familiar

2. Unfamiliar

C. Create

I. Readiness

A. Rote: "Songs and rhymes are learned by rote which contain rhythm and/or tonal content which will be studied later."

"Learning to understand music by ear and later by reading and writing ensures that the ear and musical mind are playing an active role in the processing of musical ideas. It ensures that understanding and creating music occur through the musical manipulation of sounds rather than the mere manipulation of symbols. Certain musical skills should be in place before the study of music literacy is undertaken. Students should have developed accurate singing voices and be able to sing in tune independently and with groups. Students should be able to maintain a steady beat while singing a song or chanting a rhyme." (Feierabend)

We begin with listening, and continue with extensive amounts of singing in tune and moving to the beat and rhythm by rote, i.e. we "do music." The approaches to music education associated with Orff and Kodaly provide myriad techniques for immersion in authentic musical experience. The Gordon approach includes the echoing of tonal and rhythm patterns on a neutral syllable. Students may also echo from instruments. The act of singing many songs also constitutes a rote activity.

Finding the 'resting tone' on a neutral syllable can also be done at this stage. For ex. Obwisana has two phrases (form), one which ends higher and one which ends on what sounds like an appropriate ending note. Ode to Joy has a similar phrase structure. Rhythmically, children may imitate the teacher as he/she demonstrates duple/triple meter to recordings and songs. Leading children through such discussions of the elements is readiness for deeper levels of musical analysis later on.

Two processes are of the highest importance in teaching for meaning in music prior to reading music: audiation and improvisation.

Since we must audiate – or inner hear – tonal and rhythm concepts in order to feel and understand, some techniques for audiation at the readiness stage are:

- songs that include audiation: Bingo, Little Cabin, Old Mr. Rabbit, Snail
- 'hide the song' – sing in/out at a signal – a cue such as a tap, snap, word or prop
- playing songs by ear. This is a form of rote aural decoding. From two-note songs on the xylophone in grades K-1 (Pease Porridge, Old Mrs. Witch, See Saw, Cuckoo), to the mi-re-do songs on the recorder in grade 3 (Hot Cross Buns, Merrily We Roll Along, Sailor Sailor, Hop Old Squirrel, Fais Do Do) and then all known songs on the piano for the upper grades.
- tap, pat, clap the beat; and the subdivision of the beat into duple and triple (meter)
- determine meter and mixed meter (Sailing Down the River, Wassail Song)
- ostinato songs such as Mary Mack, Landlord, Long Legged Sailor
- sing songs with ostinato patterns (ex. Skip to My Lou)

The person who can improvise with the elements of music can respond to, read, write and understand music with greater comprehension. The ability to improvise is evidence of the degree of mastery the improviser possesses and thus provides the assessment of musical skills and understandings. Improvisation is an important technique with which to appropriately teach to students' individual differences.

- improvisation at the rote level can involve creating texts (Skin & Bones, Who's That)
- creating variations - with recorders in grade 3, children can choose to change the melody, rhythm or form of a known song. (Variations on Hot Cross Buns. Also, listen to the Mozart "Twinkle Variations".)

Another important principle at this stage is the development of independence. Some techniques for the development of independence are:

- sing alone & unaccompanied
- rounds in small groups
- rounds where group counts off by the number of parts
- "body canon"
- harmonizing by ear

II. Conversational Solfege

The next step in the sequence is referred to by Feierabend as "Conversational Solfege" (and by Gordon as Verbal Association, although the analogy is not exact).

II. A. Rote: "Rhythm syllables and/or tonal syllables are introduced. Patterns are spoken or sung by the teacher with the syllables and students repeat, by rote, the patterns with the syllables. During this stage students bond rhythm and tonal patterns with aural labels."

Some techniques for audiation:

- learn songs in solfa
- sing songs in solfa and leave out certain notes
- perform songs in various keys (for the concept of keyality) voice/recorder/piano
- perform the major and minor scales; "melodies are based on scales"
- determine mode of known songs – resting tone
- change the mode of a well known song (Frere Jacques/Mahler Sym. #1; Twinkle in minor; Ah Poor)

- follow two hand signs in parts – great for choral tuning and developing part singing, dealing with parallel thirds and dissonances
- songs with bass lines in solfa

For more advanced groups:

- sing a round and tap/sign the second/third parts
- **bi- and tri-tonality exercises – songs in parallel keys

II. B. 1. Decode-Familiar: "The teacher speaks or sings familiar patterns on neutral syllables then the students repeat the patterns with rhythm or tonal syllables." Decoding can be from the teacher's voice, an instrument, tapping/clapping or by deriving patterns from known songs.

Some techniques for audiation:

- aural decoding from xylophone – with and without looking
- echo hand sign patterns
- follow hand sign patterns; sing in/out at a signal

II. B. 2. Decode-Unfamiliar: "The teacher speaks or sings an unfamiliar pattern on neutral syllables then the students repeat the patterns with rhythm or tonal syllables."

Some techniques for audiation:

- determine solfa to known songs
- identify songs from hand signs (mystery songs)

II. C. Create: "Students create original rhythm or tonal patterns using rhythm or tonal syllables."

When a student has developed mastery in echoing and aural decoding of tonal and rhythm syllables, improvising or creating with tonal and rhythm patterns is the crucial next step. Improvising with syllables is analogous to putting spoken words together in new ways. Improvisation with the elements of music is as necessary to music literacy as conversing is to language development. Improvisation also serves as assessment!

At first, children are asked to make up a pattern, usually within guidelines such as rhythm patterns of four beats in length using the most basic syllables or tonal solfege patterns limited to proscribed notes. Some common challenges include rhythm patterns that are not four beats in length, uneven subdivision of the beat, and more rarely inaccurate labeling of rhythmic function. Melodically, inaccurate labeling is a frequent problem. The single best technique for correcting this problem is developing skill in improvising with tonal syllables. When getting started with improvisation, students may add a final note to a pattern given by the teacher, or the student may improvise a pattern and have the other students evaluate whether that pattern "made sense" – if the pattern is correct the students echo; if not, they stay silent. In this way the listeners gain as much comprehension of tonal and rhythm patterns as the improviser.

Circle games that both develop these skills and motivate the students toward mastery are an effective tool. The basic rules of the "Rhythm Improvisation Game" are similar to the "Telephone Game" where each person in the circle must react appropriately to the previous person. We all keep a steady, soft beat. Going either to the right or left, each person must make up a pattern that makes sense and stays within the guidelines, while keeping the beat steady. The guidelines can start with just "du, du de and du da di" (or whichever syllable system you employ). As skill is developed, patterns with higher degrees of difficulty are added. Other rules such as the requirement that the improvised pattern must begin with a restatement of the previous pattern(s) followed by the new pattern can be great fun.

III. Reading

Feierabend refers to the next step as "Reading" (and Gordon as Symbolic Association). **IF MASTERY HAS BEEN ACHIEVED AT THE PREVIOUS LEVELS, STUDENTS WILL BRING MEANING TO MUSIC NOTATION BY MAKING CONNECTIONS BETWEEN THE SOUND AND THE SYMBOL – AND THEY WILL FIND IT EASY!!**

III. A. Rote: "During this stage the students are introduced to notation symbols. The teacher reads notated patterns for the students and then the students repeat the pattern while looking at the notation."

- students imitate the teacher reading flashcards or notation boards
- word spelling games for letter names
- "any letter name note can be 'do'" – refer back to singing songs in keys
- white and black keys on the piano

III. B. 1. Decode-Familiar: "The teacher asks the students to think through notated patterns with rhythm or tonal syllables and then speak or sing them aloud using syllables."

- students read familiar flashcards or other printed notation.
- when the students have their own materials, they point to where they are reading as a group, and perform examples alone.
- students raise their hands if a mistake is made while another student is reading.
- follow the 'tone ladder' or 'flying staff' or "hand staff"
- sing in/out at a signal while reading from notation
- while reading from notation sing out/in every other measure, or specified measures
- read songs in solfa and leave out certain notes
- read or play songs in various keys – voice/xylophone/recorder/piano

III. B. 2. Decode-Unfamiliar: "The teacher asks the students to think through unfamiliar notated patterns with rhythm or tonal syllables and then speak or sing them aloud using syllables."

- students read flashcards or other printed notation that they have not seen before.
- follow the 'tone ladder' or 'flying staff' or "hand staff"
- identify a song from notation or 'flying staff'– 'mystery song'
- Eilers/Crocker sight singing; Feierabend student book

IV. Writing

IV. A. Rote: "Students should copy existing music and be instructed in proper manuscript techniques."

IV. B. 1. Decode-Familiar: "The teacher speaks, sings or plays familiar patterns or phrases from a song or rhyme with neutral syllables or the text. Students think each pattern with syllables (conversational-decoding) and then write the notation for the pattern."

IV. B. 2. Decode-Unfamiliar: "The teacher speaks, sings or plays unfamiliar patterns or phrases from a song or rhyme with neutral syllables or the text. Students think each pattern with syllables (conversational-decoding) and then write the notation for the pattern. This stage is often referred to as dictation."

IV. C. Writing-Create: "This is when students compose their own original music." This is one of the best activities for "immersion in complex experience." Theoretical aspects such as key signature and time signature, as well as harmony, timbre, dynamics and style may be included.

Grade 3:

- Popsicle sticks – dictation; improvise a pattern and write it
- rhythm dictation game on board
- review staff notation (EGBDF, FACE – spell words – sts place notes on music mats/boards)
- explain two ways of naming notes – solfa and letter (one is best for sound, one for notation)
- melodic dictation on music mats
- improvise a melodic pattern & write it
- review form; phrases: same, similar, different; diagram w/A, B, C, etc.
- introduction to recorder
- variations – listen to Mozart-Twinkle; Walking variations CD
- improvise variations on Hot Cross Buns

Grade 4:

- review above (more advanced tonal/rhythm content)
- writing practice: staff notation – manuscript rules: stems, etc.; copy examples
- write familiar songs on board and staff paper (sketch on board from dictation)
- continue recorder – transpose songs from G to C & F
- write Hot Cross Buns variations –
first, as a group on the board; then challenge individuals – how many?
- introduction to piano keyboard; C major scale; all recorder songs
- play piano from staff notation; single notes, then patterns
- piano - # & b notes; enharmonics
- yellow sight-singing book
- focus on time signatures – theory (add bar lines to examples)
- read best student compositions from past

Grade 5:

- review above (more advanced tonal/rhythm content)
- read best student compositions from past (also show unsuccessful examples)
- write familiar songs on board and staff paper (sketch on board from dictation)
- write familiar, easy songs in various keys
- dictation of unfamiliar patterns/examples
- focus on key signatures – theory (students discover by playing on piano)
- improvise and write a short song on the board (teacher 1st; then students)
- discuss form in terms of unity/variety & tension/release (resting tone)
- review composition project criteria & rubric
- students read and perform individual compositions

Common mistakes to be avoided:

- stems (when they go down they should come from the left side of the notehead; when they go up they should come from the right side of the notehead.)
- stems should be a minimum of 3 staff lines long.
- note heads must be clearly on a line or in a space (if on a line, the note head should go half way into each adjacent space; if in a space, the note head should just touch each adjacent line.)
- bar lines should begin at the bottom line of the staff and finish at the top line of the staff, not above or below the staff.
- avoid too many large skips in your melody; they are not easy to perform.
- make sure the time signature is correct (each measure must add up to the given amount of beats).

Syllable Systems - Movable-Do or Fixed-Do?

The learning sequence above refers to tonal and rhythm syllables, which are syllabic representations of sound and function (syntax). The tonal system known as movable-do solfege is most appropriate for our purposes because it is "fixed" aurally as opposed to the "fixed-do" system which is "fixed" visually. This naturally follows the principle of "Sound before Sight."

While there is "general" agreement in music education in America that movable-do solfege is the most appropriate tonal system, there is much disagreement as to the rhythmic syllable system. A syllable system using numbers for rhythm engages the mathematical intelligence. Therefore, since our goal is to develop our students ability to 'think sound,' the enumeration system is not the best place to start. Syllables that represent function should have internal logic. For example, Ta Ta Ti Ti Ta is inconsistent in that the macrobeat on beat three is not given the same label as the other macrobeats. It requires the uninitiated performer to make the mental calculation that when there are two sounds on a beat it is given a certain name. A system that represents sound and function alone does not require this extra step. Laurdella Foulkes-Levy has adapted the system above with the pattern Ta Ta Ta Ti Ta, which represents an "aural-first approach." The "Takadimi" system also has internal logic. The Fairfield Public Schools has adopted the Froseth/Gordon syllables (du, du de, du da di, du ta de ta). We also transition to the enumeration system (1 + 2 +) in grades four and five as it is in common use in many upper level ensembles.

Instrumental Instruction in the Classroom

Instruction on the xylophone (beginning in kindergarten), recorder (beginning in third grade) and piano (beginning in fourth grade) actively involves the mode of kinesthetic/tactile learning. We must, however, be mindful of 'sound before sight' and avoid teaching formulas in which holes to cover or keys to play without a reference to the sound first. A great place to begin is to play by rote the songs that they know by memory in solfa. Some of these are: Hot Cross Buns, Merrily We Roll Along, Pierrot, Sailor Sailor, Fais Do Do, Hop Old Squirrel, Over My Head, Long Legged Sailor. Some of the MRD songs are left for sight-reading, for ex. Golden Key. As we progress to larger tone sets, we always begin by rote and then move on to conversational solfege and reading. (If only we had more time!!!!)

Breadth vs. Depth

Music educators have a very limited amount of time to teach all aspects of the curriculum. Some thoughts from Howard Gardner (The Disciplined Mind) might apply here.

"Over time, the pendulum has oscillated between breadth and depth. In general, the push has been toward covering as much information as possible. However, the advantage of pursuing a smaller number of topics in far greater depth has also been recognized. Students should probe with sufficient depth a manageable set of examples so that they come to see how one thinks and acts in the manner of a scientist, a geometer, an artist, an historian. The purpose of such immersion is not to make students miniature experts in a given discipline, but to enable them to draw on these modes of thinking in coming to understand their world. Later, if they want to range more widely in these disciplines or pursue a career in one of them, they will find the time and tools to do so."

"Let me introduce my alternative educational vision – one firmly centered on understanding. An individual understands a concept, skill, theory, or domain of knowledge to the extent that he or she can apply it appropriately in a new situation."

Therefore, at the beginning stages of music instruction, the melodic and rhythmic reading content can be somewhat limited, but all stages of skill levels should be experienced. Students must spend much time at the readiness and conversational solfege levels, prior to reading and

writing. For example, students should improvise and compose, as well as read and write independently, even if the elements are limited to do, re, mi and basic rhythmic values.

Relaxed Alertness

I have one additional comment regarding relaxed alertness. I feel that music, so rich in emotional content, is a subject which is naturally given to high degrees of motivation. We see many examples of highly motivated students, but we must acknowledge that there are some who lack intrinsic motivation. One story I have heard numerous times from adults is about the teacher in school who told the student to sing softly or to "lip sync." The result is a person who has not felt comfortable singing ever since.

To minimize downshifting and to develop intrinsic motivation and a feeling of competence, an effective technique is the concept of singing notes accurately as "target practice." I have a 'target' drawn on the blackboard in my room and frequently remind the students that our goal is to "hit the notes on the bull's eye, not too high (which is called sharp) or too low (which is called flat). I also have a poster in class that I have the older students refer to frequently: "It's OK to make a mistake when you've tried. It's a mistake not to try."

Conclusion

The teaching of music literacy is enhanced when it is informed by principles of "brain-based instruction" and insight from cognitive psychology and linguistics. To answer the questions, "What constitutes meaning in music, and, how do we design and orchestrate lifelike, enriching, and appropriate experiences for learners which ensure that students process experience in such a way as to increase the extraction of meaning," the following principles are paramount:

- 1) Meaning and understanding in music must begin with the aural elements of music, primarily tonality and meter.
- 2) To master these elements we must first experience them through singing and moving, and then guide our students to "think music," i.e. develop audiation skills.
- 3) Immersion in complex, authentic experience in music is effectively achieved through the processes of creating, performing and responding. We must utilize our precious time wisely – a large majority of class time must be spent "doing" music. Learning about music has its place, but it should not be the focus of class time.
- 4) The key principle of language acquisition, "**Sound before sight**," is also the key principle of music literacy. This implies that the teaching of notational audiation must be sequential, not random.
- 5) The three key learning sequences are: the skill learning sequence, the tonal content learning sequence and the rhythm content learning sequence.
- 6) **Improvisation** with the elements of music is as necessary to music literacy as conversing is to language development.
- 7) The act of musical **composition** is a global experience which involves comprehensive musicianship.

To conclude, I give you my adaptation of the old Chinese proverb: Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime.

My musical proverb is: Teach a person a song and he/she will have one song to sing. Teach a person how to read music and you have given the gift of music literacy, the doorway to all music.

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