

Learning for Comprehension vs. Learning for Instant Gratification; How to Convert Affective/ Psychomotor Music Students into Cognitive/Critical Thinking Music Students

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Woodwind music is notorious for having highly complex rhythms. Just look at the second variation of Janice Dockendorff Boland's *The Banks of Ayr*, measures 35 to 38 in the first flute part of Richard Strauss' *Till Eulenspiegel's Merry Pranks*, or the second and third movements of the flute part in John Corigliano's *Three Irish Folksong Settings*. All three of these examples have many rhythms that are not common in most Western European music or American music. Many people love this style of music; but few musicians (especially student musicians) attempt it without hearing it multiple times first. Why?

Syncopation (putting emphasis on a rhythm that occurs on a weak beat) is the cause for all of this confusion. It is the most hated word among all music students, especially when it comes to sight reading! In most etude books and band scores, the first note occurs on a strong beat, which occurs when the foot is ON THE FLOOR. If you look at the most basic heirchy of rhythms and rests (see the rhythm and rest charts below), the stronger beats are the "numbered beats" or the DOWNBEATS.

Heirchy of Rhythms and Rests

Whole Note and Whole Rest



1	2	3	4
Down Up	Down Up	Down Up	Down Up

Half Notes and Half Rests

1	2	3	4
Down Up	Down Up	Down Up	Down Up

Quarter Notes and Quarter Rests

1	2	3	4				
Down Up	Down Up	Down Up	Down Up				

Eighth Notes and Eighth Rests

7	7	7	7	7	7	7	7
1	&	2	&	3	&	4	&
Down	Up	Down	Up	Down	Up	Down	Up

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Sixteenth Notes and Sixteenth Rests

D= Foot Down

D	e	&	a	D	e	&	a	D	e	&	a	D	e	&	a
D	e	Up	a												

32nd Notes

D= Foot Down/ U= Foot Up

1 e & a	U e & a	2 e & a	U e & a	3 e & a	U e & a	4 e & a	U e & a
D e U a	U e U a	D e & a	U e U a	D e & a	U e U a	D e & a	U e U a

Visually, most of the patterns above have equal divisions of sound (or silence) on the downbeat and on the upbeat. Most students easily convert these even, mathematical divisions of the rhythms and rests to **sight word memory**. Do you remember how you learned basic words like “the,” “an,” and “them” in first grade? Do you remember how you learned your multiplication tables in third grade? Sight word memory occurs when you memorize small amounts of information and use that information to perform a repeating or a reoccurring task. Thus, it is very easy to convert sight word memory material into long term memory quickly.

Sadly, most middle school and high school band method books stop at this level of music comprehension. Once students get out of sight word memory mode and must think at a higher level (and use more steps to break down the rhythm and rest patterns), their brains lock, and they either “guess” or break the rhythm down phonetically.

Most students prefer instant gratification. Breaking the rhythm down by writing the counts in and clapping the rhythm takes time and additional steps, especially if they have to line the rhythm on the page with the direction of their foot. To avoid any additional work and get fast (but not long lasting) results, students sometimes get their instructor so frustrated that he or she will teach the rhythm or rest in question by rote, which is the path of least resistance for the instructor. This is in direct contrast to the New Bloom’s Taxonomy of Thinking.

The **NEW BLOOM’S TAXONOMY OF THINKING** has 3 divisions of educational objectives or “domains”: Affective (emotional), Psychomotor (physical manipulation of a tool, object, or task), and Cognitive (knowledge, comprehension, critical thinking, and problem solving).

Affective	The student wants to “feel” the pulse by listening to the recording many times, have the accompanist cue them in on each entrance, and guess at the correct placement of each entrance. These students go for artistry 1 st and rhythm accuracy last.
Psychomotor	These students are SPEED DEMONS! They listen to the recording, get the fingerings for the notes (sort of), and repeat those same fingerings with the recording over and over again.

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	Just think MARCHING BAND!!!!
Cognitive	These students learn to count and read the music 1 st , build up the technique 2 nd , and add the artistry LAST.

COGNATIVE LEVEL OF BLOOM'S TAXONOMY OF THINKING
(Bottom Level=Lower Level Thinking/ Top Level=Higher Level Thinking)

Analyze	Evaluate	Create
Highest Level Thinking		
Apply (Upper Middle Thinking)		
Understand (Middle Level Thinking)		
Remember/ Memorize (Lowest Level Thinking)		

http://en.wikipedia.org/wiki/Bloom%27s_Taxonomy

Students who guess at rhythms and rests (Affective, Psychomotor) tend to memorize rhythm and rest patterns. However, they do not always UNDERSTAND these patterns, especially if the passage in question is syncopated. For the most part, such students have the following characteristics.

- High Intelligence.
- Slightly Weaker Work Ethic.
- High Auditory Processing Speeds but Weak Visual Processing Speeds. A **Processing Speed** is the speed at which one is able to encode and comprehend phonetic, auditory, and/or visual information accurately (Baddeley, 283).
- Very Little Independent Thinking, which is also known as **High Reproduction** (i.e. Can Play Back Rhythms and/or Rests if Performed by Another Musician First), but Low Perception (Cannot Read the Rhythm and Rest Patterns for Themselves) (Repp, 37).
- Focus on **whole approach learning**. These students go from beginning to end of the piece without breaking down the hard parts.
- Do not create an **Episodic Buffer**- a temporary storage system in the frontal lobe of the brain that uses multiple brain signals to create internalized knowledge and skills based on outside information gained from perception (initial receiving of information), working memory, and long term memory. Once attention is gone (i.e. "brain lock"), forgetting information not saved in long term memory immediately takes place (Baddeley, 23).
- Tap foot with every subdivision. They cannot think beyond simple groups of 2's and 3's. For these students, every sixteenth note is a downbeat regardless of whether or not the selection calls for doubled time.
- Have the Following Order of Obtaining Rhythm Knowledge: Memory (listening to band director and classmates over and over again and trying to play by rote), synthesis (come up with a rhythm that sounds close to the written rhythm), and create (speed up, slow down, and make things up as they go).
- Struggle to keep a steady beat, especially a slower one.
- Do not clap and say harder rhythmic passages.
- Look away from the music before the notes and rhythms are processed into long term memory.

On the other hand, students who break things down phonetically (Cognitive) usually understand the rhythms and rests in relation to the foot direction (and the conductor's baton) and apply the patters that they see in one piece to others. These students analyze and evaluate their own level of comprehension and use critical thinking and problem solving skills to solve complex rhythm problems (especially in sight reading) independently. Other characteristics of phonetic students include the following.

- High Intelligence.
- Strong work ethic. These students have to study all through grammar school, middle school, and high school.

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- High Visual Processing Speeds but slightly Weaker Auditory Processing Speeds.
- High Perception (i.e. music read for themselves 1st), but Slightly Lower Reproduction (Repp, 37). These students are more tactile and hands on learners than they are auditory learners.
- Constantly analyze, synthesize, and evaluate their own work independent of their instructor.
- Constantly apply new concepts to other aspects of the piece as they occur.
- Think analytically first and creatively second. These students find problem areas, workshedd details, and put problem areas back together with the whole piece.
- Play at an optimum tempo by themselves and with others. A student's **optimum tempo** is the speed at which he or she can play the hardest technical passages of a piece accurately with no mistakes.
- Have the Following Order of Obtaining Rhythm Knowledge: analyze, apply, synthesize, memorize, and create.
- Create an episodic buffer by using the above order of rhythm knowledge. Students rehearse concepts within the Phonological Loop. Through repetition, the brain moves the information from short term memory and working memory to long term memory (Baddeley, 19-20). The information is now internalized. A pathway to the information in the brain is created making knowledge retrieval possible.
- Tap their feet with the subdivision of the time signature. These students divide hard concepts into simple groups of 2's and 3's, internalize those concepts, and put concepts back into the phonetic whole.
- High "**Input Skills**"- "skills the sight reader uses to collect information and to order that information prior to output or performance." These skills are a "collection of simple skills that can be addressed individually" (Saxton, 23).
- Clap and count the harder rhythmic passages out loud before playing them.
- Write the counts in for hard rhythm and rest patterns.
- Use a slow, steady beat when working on harder passages.
- Do not look away from the music until the notes and rhythms are processed into long term memory.

How do we music teachers convert Affective/Psychomotor music students into Cognitive music students? We show students how to break down syncopated rhythm and rest passages. Syncopation can occur in a variety of ways. Below are some other forms of syncopation that make music students crazy as well as solutions on how to address these problems.

A. Ties

If you look at the tied passages from George Philip Telemann's "Scherzando" from Louis Moyse's *Solos for the Flute Player*, you will see that the tied passages conclude with an upbeat entrance into the new motive. Most students will extend the tie to the next down beat or cut out the tied note altogether, which puts them one to two beats ahead of the accompaniment or ensemble. To eliminate this possibility, write in all of the sixteenth note subdivisions DIRECTLY under the rhythms and rests that they coincide. Then, CIRCLE the counts that are included with the tie. Students must clap and say this passage several times lining their foot up with the correct downbeat (number) and upbeat ("and") while keeping time with a metronome at quarter notes equals 40. After 3 to 5 repetitions, the students must play that passage on one pitch at the same speed. Finally, the students must play the passage as written between 3 to 5 times at quarter note equals 40.

B. DOTTED RHYTHMS

Dotted rhythms (and rests) are 3 rhythms or rests of the next smallest value tied together. This rule was not a mandate among musicians until Jean Rousseau's book of rhythm pedagogy was published in 1687. Rousseau referred to the duration rule of dotted rhythms as "*The Quarter and A Half Rule*" (Fuller, 26). Dockendorff Boland's *The Banks of Ayr* has an entire variation where the dotted eighth note is placed

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after the downbeat instead of before. Most students change this rhythm to a dotted quarter note and single eighth note because it is in their sight word memory from middle school and high school. To eliminate this possibility, write in all of the sixteenth note subdivisions DIRECTLY under the rhythms and rests that they coincide. Then, CIRCLE the counts that are included with the dotted rhythm or dotted rest. Students must clap and say this passage several times lining their foot up with the correct downbeat (number) and upbeat (“and”) while keeping time with a metronome at quarter notes equals 40. After 3 to 5 repetitions, the students must play that passage on one pitch at the same speed. Finally, the students must play the passage as written between 3 to 5 times at quarter note equals 40.

C. TRIPLETS

Students HATE mixing triplet patterns with eighth and sixteenth note patterns because it goes against the 2:1 or 3:1 ratio. Our brains are programmed to memorize formation into single groups of 2’s and single groups of 3’s. The minute the rhythm pattern changes into a 3:2 ratio or a 2:3 ratio, the brain gets confused because the mathematical pattern is no longer equally divisible (Reifinger, 4).

Richard Moon (a former band director and a current elementary school general music teacher) says *“The human brain is programmed to take the path of least resistance. It will automatically go for the easiest solution. Like computers, the human brain can switch from a “whole language” system of learning to a “phonics” system of learning within a few seconds (and vice versa). Here is the trick. You must guide students to switch from one counting system to another. If one system does not work, one of the other systems will. This is the same problem solving process that a computer programmer goes through when he or she is writing code”* (Moon Interview, 21 August 2009).

The only way to overcome this obstacle is to write all of the counts in for all of the rhythms and rests, clap and say all of the rhythm patterns 5 to 10 times, and play the entire passage SLOWLY at quarter note equals 40 on one pitch. Students must understand that the triplet has 3 equal divisions of the foot tap. Many find it helpful to count triplets as “1 up half, up all” rather than “1 o let” because it helps the students understand their foot positions. Please see the diagram below.

Triplet Diagram
D= Foot Down/ UH= Foot Up Half Way/ UA= Foot Up All the Way



1	o	let	2	o	let	3	o	let	4	o	let
D	UH	UA									

D. RESTS

If rests occur on strong beats, accents are usually placed on weak beats. An accent is a slight emphasis of sound on a rhythm. Normally, accents are placed on STRONG BEATS, not weak ones. Thus, these rhythms are not in the students’ sight word memory. Students must break down such passages phonetically, which help put the new concepts into working memory and (after several repetitions) long term memory. Most student musicians view rhythms as “easier” if the longer duration of the sounding note occurs BEFORE shorter duration (i.e. on the down beat). They also prefer to have the sounding note occur on the strong beat (down beat) and the rest occur on the weak beat or upbeat (Repp, Windsor, and Desain, 575).

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Think of measures 17-19 of George Philip Telemann's "Scherzando" from Louis Moyse's *Solos for the Flute Player*. How can one get students to rest on the eighth note rest at the beginning of each theme? Mark in ALL of the sixteenth note subdivisions in each measure. Circle the subdivisions that go together for each of the sounding notes, and put parentheses () around the subdivisions that belong with the rests. Make sure the subdivisions line up under the rhythms or rests that they coincide. Clap and say the passage out loud 10 times with a metronome set to quarter note equals 40. Play the passage on one pitch 10 times at the same speed. Then, play the passage as written 10 times at quarter note equals 40.

E. Asymmetric Meter

Asymmetric meter really throws music students and conductors for a loop! These time signatures are most often used in 20th century art music, grade 5 and 6 band scores, film music, and jazz. Frequently, the tempos in these works are incredibly fast, which force the musicians to divide counts up into unequal (and constantly changing) patterns of 2 and 3. Yikes! The 3:2 and 2:3 ratio again! UGG! At this point, most students BEG their instructor to sing the passage to them! None of the patterns from their beloved sight word memory match up to the rhythm and rest patterns they now see on the page. Even worse, the traditional numerical counting system that their middle school and high school band books engrained into them no longer works! Oh no!

Believe it or not, there is a solution. Divide asymmetrical measures into smaller groups of 2 and 3 based on where the accent is placed, which usually occurs when the beam of a group of eighth notes or sixteenth notes is broken. For every eighth note pulse in the time signature, write 1 slash. For example, for a 7/8 time signature, you would draw 7 evenly spaced slashes at the bottom of the measure. Change the first slash to a DOWN arrow. Every time a beam breaks, mark that slash beneath that break as a DOWN arrow too. The DOWN arrows are the accented beats. Next, visually group the remaining rhythms and rests into smaller groups of 2 and 3. Look at the beaming of the rhythms for assistance. Some students find it helpful to mark a square above each group of 2 and a triangle above each group of three. For each of these groups, mark where the upbeats occur with an UP arrow. The pattern of 2 has more of a march feel. The pattern of 3 has more of a waltz (dance) feel. See the diagrams below.

Diagram A: Break Down of an Asymmetrical 7/8 Time Signature in Eighth Notes

Pattern of 2		Pattern of 3		
				
Down Up	Down Up	Down	Up Half	Up All

Diagram B: Break Down of an Asymmetrical 7/8 Time Signature in Sixteenth Notes
D=Foot Down/ U=Foot Up/ UH=Foot Up Half Way/ UA= Foot Up All the Way

Pattern of 2		Pattern of 3		
				
D e UA a	D e UA a	D e	UH a	UA a

Set a metronome to eighth note equals 60 (Diagram A) or sixteenth note equals 120 (Diagram B). Clap and say the passage using the arrows that you have written at least 10 times. Make sure the foot follows the SAME direction as the arrows that you have written under the measure. This is the easiest way to internalize an asymmetrical pattern. Do not take your eyes off of the music! Do not speed up the tempo! After 10 repetitions, play the passage on a single pitch at the same speed. Play the passage as written at the same speed 3 to 5 times.

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F. 32nd Notes and 64th Notes

Both of these rhythms are found in traditional western European music and European and Asian folk music. Students struggle to line up rhythm divisions shorter than a 16th note into equal, mathematical divisions relating to the foot direction. Most band books and etude books DO NOT subdivide rhythm or rest divisions smaller than a 16th note. In fact, very few pieces of grade 5 and grade 6 band literature contain subdivisions smaller than a 16th note. In North Carolina and South Carolina, few of the solos in the all-state rotation have subdivisions smaller than a 16th note. The chart below dissects the process of breaking down 32nd note (and rests) and 64th note (and rests) passages.

Guide for Breaking Down 32nd Notes and 64th Notes

Step	Work in Double Time at a VERY fast tempo.	Work in Double Time, "Feel" in Regular Time.	Down Beats and Up Beats
1	Take the tempo at eighth note equals 100 on the metronome.	Take the tempo at eighth note equals 100 on the metronome.	Using the rhythms' BREAKS IN THE BEAMS as guides, mark in "down" arrows for the 32 nd or the 64 th notes that occur on the downbeat; and, mark "up" arrows for all 32 nd or 64 th notes that occur on an upbeat.
2	Cover up the last beam or flag on each of the notes. This will tell you what the rhythm is in regular time.	Cover up the last beam or flag on each of the notes. This will tell you what the rhythm is in regular time.	Take the tempo at eighth note equals 100 (32 nd notes) or sixteenth note equals 100 (64 th notes) on the metronome. For 32 nd notes, use the first click as your downbeat and the second click as your upbeat. For 64 th notes, the first click is the down beat, the second click is "e," the third click is "and," and the fourth click is "a." This means the student is playing in REGULAR TIME, which means that the quarter note gets the down beat.
3	Clap and say the rhythms at the slower tempo many times WITH THE METRONOME WHILE TAPPING THE FOOT.	Clap and say the rhythms at the slower tempo many times WITH THE METRONOME WHILE TAPPING THE FOOT.	Clap and say the rhythms at the slower tempo many times WITH THE METRONOME WHILE TAPPING THE FOOT.
4	Play the rhythms at the slower tempo many times on one pitch WITH THE METRONOME WHILE	Play the rhythms at the slower tempo many times on one pitch WITH THE METRONOME WHILE	Play the rhythms at the slower tempo many times on one pitch WITH THE

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	TAPPING THE FOOT.	TAPPING THE FOOT.	METRONOME WHILE TAPPING THE FOOT.
5	After moving the metronome up to the students' optimum tempo, perform the song using the eighth note as the main pulse (Moon Interview, 21 August 2009).	After moving the metronome up to the students' optimum tempo, mark down arrows for the 32 nd notes that are supposed to be on the down beats and up arrows for all of the 32 nd notes that are supposed to be on the upbeats (Moon Interview, 21 August 2009). USE THE BREAKS IN THE BEAMS OF THE RHYTHMS FOR ASSISTANCE.	Increase the speed on the metronome up to the students' optimum tempo.
6		Move the metronome back to eighth note equals 100. COUNT THE RHYTHMS IN REGULAR TIME, which means that the quarter note gets the down beat once again.	
7		Continue to increase speed on the metronome until the students reach their optimum tempo. Make sure they continue to feel the pulse in regular time.	

Why do Students of All Ages FEAR Counting Complex Rhythm and Rest Patterns?

A. Do Not Want to Deviate from Their Comfort Zone.

Students LOVE the information locked into their sight word memory, which is a “whole language approach to learning” (Moon, Interview 21 August 2009). Most band books and etude books only address one concept per lesson and do not repeat that concept again for several chapters. One lesson is not enough exposure to a concept to transfer information from working memory to long term memory. One abdominal crunch is not enough exercise if one wants rock hard abs. One must do multiple repetitions of the same exercise for the workout to be effective.

B. Fixation and Chunking

Term	Definition	Application	Reason this Could Confuse Students
Fixation	“Brief snapshots the eye accomplishes to view information”	Helpful technique for sight-reading. Helps a musician	If done at a fast tempo, the brain will find the rhythm

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	which “provide clear vision of a circle approximately 1inch in diameter” and “last approximately 250 milliseconds” (Saxton, 24).	read a measure or two ahead of the measure he or she is currently playing (Saxton, 24).	or the pitch closest to the one the musician saw previously. This rhythm or pitch probably will not be the correct one. Again, the brain is programmed to take the path of least resistance when faced with a challenging situation in a limited amount of time (Moon Interview, 21 August 2009).
Chunking	“Vocabulary of commonly occurring note (or rhythm) groups that can be rapidly encoded and processed in reading” (Saxton, 24).	Helpful technique for the musician to detect repeating pitch and rhythm patterns. Helps to cut down on the amount of practice time needed.	Could cause transition errors -mistakes that occur when the musician struggles to change from one repeating pitch or rhythm pattern to another. Could cause the musician to go into an autopilot mode and forget where he or she is in the music.

C. NO INSTANT GRATIFICATION!

Based on my professional experience as an educator, a judicator, and a musician, it seems many students have gotten used to having instant gratification from the Internet, iPods, and their peers. When they begin the instrument, they progress at a rapid pace, and the improvements that they make are obvious. As the music becomes more demanding, the rapidity of instant gratification decreases.

D. Most band and etude books work on the MEMORIZATION OF RHYTHMS (whole language approach) and not the ANALYSIS of rhythms (phonics approach). When students see mixed rhythms, they CANNOT process them without doing one of the following: 1) hearing the passage several times from an instructor or classmate, or 2) breaking the passage down phonetically (similar to using Latin roots to determine the meaning of an unknown word).

E. Do Not Want to Tap Their Foot/Syncopate/Do A Rhythm Time Line.

Students prefer to learn complex rhythm passages by rote. When you first learn how to talk, you learn through AUDIATION. The written aspects of the language are not addressed until first grade. Think of your upper level math classes in high school. Teachers CONSTANTLY asked you to show your work, which would mean multiple steps and 6 pages worth of paperwork to get to one answer. You hated doing

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all of that “extra work,” and you probably tried to do most of it in your head. Once you got that first “F” back on a unit test, you learned that you have to go through all of those steps to achieve success. The same is true with reading complex music notation.

F. Extra Layers

Students try to implement multiple levels of complication before the first level of complication is processed into Long Term Memory, which leads to INFORMATION OVERLOAD. The brain shuts itself down to avoid over processing. If too many commands are given to a computer at once, the computer will freeze up to avoid over processing, which eventually leads to the hard drive crashing.

G. Do Not Know which Counting System to Use-Different Music Teachers at Different Levels Use Different Counting Systems (Moon Interview, 21 August 2009).

H. **Phasing**- a music error that occurs when a portion of the ensemble is rushing the beat and another portion of the ensemble is dragging the beat.

Weaker students tend to drag the beat. Classically trained students (i.e. the student who take private lessons outside of band class) usually stay with the band director or the ensemble. The highly talented students with high technical ability (who may or may not take private lessons outside band class) tend to rush the beat (Repp, 38).

General Breakdown of Most Student Musicians

Affective and Psychomotor	Cognitive	Affective and Psychomotor
Remember/Memorize Understand (Sometimes)	Understand Apply Analyze/Evaluate/Create	Remember/Memorize Understand Apply (Sometimes)
Weaker students with no private music training.	Critical Thinking Students (most of who have had private music training).	Highly talented students (who may or may not have had private music training) with High Technical Ability
Low processors. Lack the ability or confidence to think independently. High reproducers. Have a great musical ear. Able to reproduce music if it is heard over and over again. Learn by trial and error. In teaching and in performance, GO FOR THE PATH OF LEAST RESISTANCE. Avoid any ensemble where there is one person to a part. Avoid solo playing. Avoid clapping, saying, and vocalizing rhythms out loud.	High processors. High ability and confidence for independent thinking and problem solving. Dislike rote learning. Low reproducers. Learn by independent thinking, problem solving, and by reading what is on the page. Active performers in chamber music and solo playing. Clap, say, and vocalize rhythms out loud consistently before playing.	Very high reproducers. Great musical ear. Have the ability to think independently and solve problems; but, may lack the motivation or time to do so. In teaching and in performance, GO FOR THE PATH OF LEAST RESISTANCE. Active solo performers as long as the accompaniment parts follow their lead whether or not it is consistent with what the composer has originally written. Active large ensemble performers as long as there is more than one person playing each part. Mostly avoid chamber music or any literature where the parts require independent thinking. Rarely (if at all) clap, say, or vocalize rhythms out loud.

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Conclusion

When students are involved as accompanists (i.e. chamber musicians) from an earlier age, they develop a sense of responsibility to other musicians and to the music. In turn, this brings another dimension to their own solo work in terms of developing skills in reading, understanding balance, shaping inner lines, and hearing how the harmonic rhythm supports the melodic shape and direction (Graves, 77).

The performers in us long to teach the complex solo, chamber, orchestral, and band literature that we performed while we were in college, graduate school, and/or doctoral school. When students think for themselves and use the higher levels of thinking in the New Bloom's Taxonomy of Needs, they convert more music knowledge into long term memory. As a result, many of these students learn newer, more challenging music in ALL genres and situations, which enables us to teach the complex music we adore. As music teachers, we cannot allow students to rely on us forever. At some point, we have to force them to learn the musical language and apply it for themselves. How else will our art form stay alive?

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