**Supplemental Materials A: Thompson’s (2013) Exploration of ZPD**

Thompson (2013) took ZPD even further and wrote about eight elements that contribute to “engagement: collaborative nature of the task/activity”:

* Social context of the classroom
* Use of semiotic tools for creating meaning
* Emotional context of learners: safety/risk
* Physical interaction: gaze, gesture, position, movement
* Use of physical tools and layout of classroom
* Student/teacher feedback, direction, or instruction
* Dialogical activity: dialectical learning
* Students’ prior learning histories/external social and cultural factors. (p. 259)

Thompson summarized different approaches to teaching ZPD:

1. Direct instruction from a teacher or more capable peer. While initially didactic, the instructive voice can be internalized by learners as part their own inner speech.

2.   Modeling of a behavior or task by an expert that the learner initially imitates and ultimately internalizes

      and appropriates.

3.   Feedback, either oral or written, that offers guidance on performance.

4.   Questioning to assess or assist performance.

5.   Reassurance and reinforcement of partially understood concepts.

6.   Redirection or recursion through the learning process.

7.   Joint exploration of meaning between teacher and pupils.

8.   Peer collaboration involving critical thinking, problem-solving, or making decisions.

9.   Scaffolding of a task, or of part of a task, by the teacher in order to provide a constructive framework for

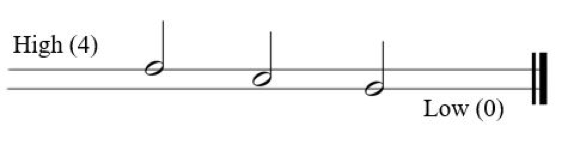
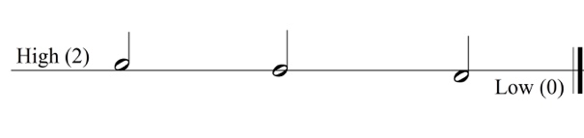
      the learner’s developing mental processes.

10. Cognitive restructuring whereby perception, memory, and action are re-evaluated and re-ordered. The

      internalization of this structure becomes part of the learner’s inner self-regulating voice. (p. 272)

**Supplemental Materials B: Beginning Composition, Beginning of Bruner’s Symbolic representation**

Violinists and Violists                Cellists                           Bassists



ASSIGNMENT: For today’s composition, you can use:

1. Three pitches (high, medium, and low)

                                      (Mi,    Re,                Do)

2. Begin on high (Mi).

3. Last note of the second measure is medium (Re).

4. Last note of composition is low (Do).

Either give all students the same rhythm that you provide or have the students work together to determine a rhythm, just using quarter, half, and eighth notes.

Rhythm:

https://lh5.googleusercontent.com/iQObTyH2IeIld5F8TDLFhgVYIJJNkm3bAx1vnRjZOuDs9ZfGhRwiT4zPOuyO2w-_5wC14KcQ4t8SGz4m1ZXAXeGugnE6jJl_utaynYFSFIOd5-0fmsYtO37CB-hSkQ=s0

****

Then, we learn to play the student compositions with this procedure:

1. **Say** the rhythm

**2. Sing** letter names until you can sing them in rhythm

3. With letter names and/or finger numbers, **Sing and Pizz.** **in rest position**,

4. **Sing and Pizz. in playing position**

**5. Play with the bow**

**Supplemental Materials C: Practicing Tips**

**Ideas for Efficient Practice**

* Use a warm-up routine to maintain skills
* Make specific practice goals
* Use efficient practice strategies (Berg, 2010)
* Plan for a musical experience

**Additional General Suggestions**

* Stretch
* Practice more often rather than longer (even 30 minutes here and there adds up)
* Practice your piece backwards
* Sing through selected sections
* Use a metronome, only when appropriate

**Practice Efficiently**

* Develop long -and short-term goals (for year, semester, month, for each practice session)
* Bracket problem areas and practice these sections often BEFORE you run through a piece!!!
* Mark in alternate fingerings (winds), stickings (percussion), and fingerings and bowings
* (strings), breath and phrasing marks (all)
* Be sure to take breaks during your practice sessions.
* Record yourself and analyze your playing
* Listen to at least 3 different recording of the pieces you are playing
* Use mental practice away from the instrument
* AUDIATE!!! Hear the music the way you want to play it in your mind.
  + While playing, compare the track the hears the way you want to sound to the way you actually sound and work to match

**Problem Solving Model for Practicing based on Berg (2010):**

* Define the problem. (What result did I just get? What do I want this note/phrase to sound like
* instead?)
* Analyze the problem. (What is causing it to sound like this?)
* Identify potential solutions. (What can I tweak to make it sound more like I want?)
* Test the potential solutions and select the most effective one. (What tweaks seem to work
* best?)
* Implement the best solution. (Reinforce these tweaks to make the changes permanent.)
* Monitor implementation. (Do these changes continue to produce the results I'm looking for?)

Berg, M.H. (2010). Fostering effective (and enjoyable!) practice. *American String Teacher, 60*(4), 30-33.

**For Fast Passages:**

* Change the rhythm; instead of even sixteenths, play:
  + long-short, long-short
  + short-long, short-long
  + long, short, short, short; long, short, short, short
  + short, long, short, short; short, long, short, short
  + short, short, long, short; short, short, long, short
  + short, short, short, long; short, short, short, long
* Add one note at a time (play 3 notes up to tempo, then 4, then 5, etc.)
* Play slower tempo and gradually add speed for each playing afterwards (use less bow).
* Play the passage and pause between string crossings; decrease the pause progressively until you eliminate the pause.

**For Tricky Rhythms:**

* Clap or count the rhythm aloud
* Play rhythms on open strings then add the pitches
* Remove slurs
* Add subdivisions of the beat

**For Intonation:**

* Play with a drone
* For difficult intonation passages play with the tonic chord in the background.
* For high passages, record the section in the lower octave and play the higher octave passage with the recording.
* In fast passages, stop on every note of the same pitch and be sure it is in tune
* Use ringing tones (Strings)

**For High Passages:**

* Practice at a lower octave

**Memorizing**

* Play pitches without rhythm (equal values)
* Write the music on staff paper. The place where you cannot write it down is what you have to practice
* Mark sections in music and memorize individual sections and then combine the sections
  + Memorize the end of the section first
* Analyze the music (harmonies, phrases, sequences, form, etc.)

**Playing Expressively**

* To play expressively, you have to always play with clear musical intent
* What do you think this music is expressing? Can you create a story or identify mood changes or attach adjectives to different sections?
  + Gather clues from intervals and harmonies, key, meter, articulations, dynamics, tempo, style, information about the composer and piece, etc.
  + If this was movie music, what would be on the screen?
  + Can you identify characters and their relationships?
  + Where is the climax of the piece? How should that be played?
    - Plan out the timbre, articulation, volume, timing, etc.
  + What is different about the recapitulation and why?

**Example of a Warm-up Routine For Strings: (Pellegrino)**

When playing or teaching, I have a default warm-up that serves multiple purposes:

* Let’s me focus on posture, position, tone, intonation, rhythm, technique, etc.
* Helps me get into the mind set up playing (almost meditative—helps me to focus and be present)
* Takes the guess work out of how I will begin—no decision-making, just doing
* My personal practice
  + Three octave GM scale.
    - SLOW, FULL Bows—center self physically and mentally
    - Twice as fast as many times as I need to play up in one bow and down in one bow
    - Flesch 7 arpeggios, broken thirds, octaves up and down scale
    - Kuergoff left hand double stop exercise in first—fifth position
      * Finger independence/balance and position of left hand

**Example of a Warm-up Routine For Winds: (Wagoner)**

**Personal example of individual practice**

There are three families and a multitude of needs for a solid warm-up in the band room. First, let’s examine how I might address these discreet needs across time in a large ensemble setting through a focus on posture, instrument carriage, characteristic tone, intonation, rhythm, technique, and musicality through the eyes of individual practice:

* We warm-up to ready the body through stretching, breathing, focusing.
* We are teaching routines which students can use individually in their own practice.
* An example of an oboe practice routine I use.

o Begin with a descending D major or chromatic scale in one octave, long tones, focusing on air, as little tension in the embouchure as possible, and a full, resonant tone. I would also listen for intonation as I descend, noting any adjustments as I play. I might do this a second time if something isn’t quite right

o I select a scale to play (often D major but not always) in two octaves in slow quarters, slurring and rearticulation at the beginning of each octave. I am focusing on the movement of my fingers and air together and listening for the legato tongue.

o Move to scales from bottom of instrument to top and down, first in quarters, then in eighths. I often chose to move chromatically from Bb, to B, to C, etc. and about 5 each practice period, focusing on finger movement and pitch center.

o Then I go back to the same scales I have selected, and work articulation patterns in one to two octaves and add thirds and arpeggios. I am working on tone, intonation, air and tongue movement. I may even add dynamic ranges to my work here.

o At this point I move into an etude book or identify the needs from the literature that are particular to the literature focus for the practice session. So I am moving into a review of technical/musical/aesthetic goals I have for the session by starting with some more familiar etudes – or trying something new.

**Writing Warm-ups for Band**

The goal of a warm-up every day is to focus the ensemble and individual student attention on the performance of individual and ensemble skills to prepare them for the rehearsal. You should be clear about what goals you have and could select from the following:

* Develop individual musical skills
* Develop ensemble skills
  + Balance
  + Blend
  + Rhythm
  + Articulation
  + Dynamics
  + Intonation
* Develop musicianship
* Plan the activities around:
  + Energy of air
  + Embouchure and stick control
  + Technique (see above)
  + Focus of the mind (engaged critical thinking)
  + Focus of the ears (listening)
  + Tuning and intonation

Pearson, B. (2013). *Crafting a Purposeful Warm-up: Don’t Just Warm-Up: Build Up. [Paper presentation].* The 67th Annual Midwest Clinic International Band and Orchestra Conference, Chicago, IL.

**Band Specific Warm-up Tips**

* **Air** is crucial to our work as musicians. Fingers ride on air, tone is dependent on air, phrasing is dependent on air. Teach percussion to breath with the group so they connect their wrist movement and stroke to the breath. EVERYONE should be involved in breathing exercises to focus and center the community of musicians.
* Warming up doesn’t always have to mean we all do the same thing. Brass can be buzzing a Remington exercise while woodwind players work on slurred chromatic passages or arpeggiated figures, all while percussion work on mallets to copy woodwinds or perform specific rudiment patterns during this time. Everyone has a way to warm-up but we can use different foci at the same time to accomplish this.
* Make sure you include technique exercises and make sure you think through how the exercise you select impacts each instrument to help students be successful. For example, alternate fingerings needed in woodwind land, adjustments for brass pitch needed, or range issues for French horn players, and what the percussionists need to make sure they have technique for all instruments found in the back of the room.
* Play a chorale and use this to teach intonation, tuning chords, hearing harmony and melody, addressing blend and balance, etc. There is so much we can do with chorales to teach musicianship and the elements of music. For instance, singing and playing can happen simultaneously in a chorale. For instance, you might ask students to “Play the phrases and sing the cadences” or “Sing the phrases and play the cadences.” Or - “Only play if you have the bass line. Everyone else sing.” Be creative and persistent.

**String Specific Practice Suggestions**

* Stop before shifts and hear the note in your head before playing the pitch. Correct the note and posture if necessary. Also, play the bottom note louder and float to higher note.

**For Large Leaps:**

* Play lower note louder, sing next pitch, then “float” to higher note.
* Vibrate the bottom note
* Choreograph shifts— each time, use the same:
  + Timing
  + Decide where in bow you shift/Amount of bow for each note
  + Speed of shift
  + Do you shift on old finger, new finger, slide, or land?
  + Hand shape
  + Use ghost tones
    - Know where the intermediate note is and use it as a guide

**For String Crossings:**

* Take away the left hand fingers and just play the open strings
* Play all notes on one string at tempo, pause, Play all notes on new string at tempo, etc.
* Write in bow direction for new string

**Supplemental Materials D:** **Examples of Some Practicing Literature References**

Allingham, E., & Wöllner, C. (2022). Slow practice and tempo-management strategies in instrumental music learning: Investigating prevalence and cognitive functions. *Psychology of Music*, *0*(0).

Austin, J. R., & Berg, M. H. (2006). Exploring music practice among sixth-grade band and orchestra students. *Psychology of Music*, *34*(4), 535-558.

Berg, C. (2019). *Practicing music by design: Historic virtuosi on peak performance.* Routledge.

Berg, M.H. (2010). Fostering effective (and enjoyable!) practice. *American String Teacher, 60*(4), 30-33.

Byo, J. L., & Cassidy, J. W. (2008). An exploratory study of time use in the practice of music majors self-report and observation analysis. *Update: Applications of Research in Music Education*, *27*(1), 33-40.

Carter CE, & Grahn JA. (2016). Optimizing music learning: Exploring how blocked and interleaved practice schedules affect advanced performance. *frontiers in Psychology, 18*(7). doi: [10.3389/fpsyg.2016.01251](https://doi.org/10.3389%2Ffpsyg.2016.01251)

Clark, J. C. (2010). Examining possible influences of string students' self-efficacy and musical background characteristics on practice behaviors. *String Research Journal*, *1*, 55–73.

Hallam, S., et al. (2012). The development of practicing strategies in young people. *Psychology of Music*, *40*(5), 652-680.

Hewitt, M. P. (2011). The impact of self-evaluation instruction on student self-evaluation, music performance, and self-evaluation accuracy. *Journal of Research in Music Education*, *59*(1), 6-20.

Jørgensen, H. (2009). *Practising.* In Hallam, S., Cross, I., Thaut, M. (Eds.), Oxford handbook of music psychology (pp. 265–273). Oxford, UK: Oxford University Press.

Johansen, G. G., & Nielsen, S. G. (2019). The practicing workshop: A development project. *Frontiers in psychology*, *10*, 2695.

# Klickstein, G. (2009). *The musician’s way: A guide to practice, performance, and wellness.* Oxford University Press.

Miksza, P. (2006). An exploratory investigation of self-regulatory and motivational variables in the music practice of junior high band students. *Contributions to Music* *Education*, 9-26.

Miksza, P. (2007). Effective practice an investigation of observed practice behaviors, self-reported practice habits, and the performance achievement of high school wind players. *Journal of Research in Music Education*, *55*(4), 359-375.

Lisk, E. S. (1995). *The creative director: Alternative rehearsal techniques : Teaching accessories*. Meredith Music Publications.

Oare, S. (2012). Decisions made in the practice room: a qualitative study of middle school students’ thought processes while practicing. *Update: Applications of Research in* *Music Education*, *30*(2), 63-70.

Rohwer, D., & Polk, J. (2006). Practice behaviors of eighth-grade instrumental musicians. *Journal of Research in Music Education*, *54*(4), 350-362.

Schatt, M. D. (2011). If I have time: Junior high school instrumentalists’ attitudes regarding practice. *Visions of Research in Music Education*, *19*, 1938-2065.

St. George, J. M., Holbrook, A. P., & Cantwell, R. H. (2012). Learning patterns in music practice: Links between disposition, practice strategies and outcomes. *Music* *Education Research*, *14*(2), 243-263.

Zhukov, K. (2012). Teaching strategies and gender in higher education instrumental studios. *International Journal of Music Education*, *30*(1), 32-45.