In observing school orchestras as they rehearse and perform, I have found that one element clearly separates superior ensembles from the others: intonation. As you help your orchestras improve their intonation, consider the following ideas that I have found particularly effective. Proactive solutions to intonation issues develop the ear and finger-pattern accuracy while reactive solutions correct pitch problems as they occur in the rehearsal.

**Proactive Solutions to Ensemble Intonation**

1. **For students to play in tune, they must know what “in tune” is.** Compare and contrast what in tune and out of tune sound like by playing two in-tune “A” strings (or tuners) and manipulating the pitch of one up or down. Have students give a thumbs-up if it needs to move higher, thumbs-to-the-side if in tune and thumbs-down if it needs to go lower.

2. **Involve students in open-string tuning issues.** Insist that students actively participate in the tuning process through hand signs (flat/sharp, higher/lower), stand partner help, and by tuning softly so that others can hear to tune accurately. Insist that fine-tuners be installed on all strings for ease and accuracy in tuning.

3. **Establish a procedure for tuning the open strings.** A group tuning procedure should teach proper manipulation of the pegs and fine-tuners, allow each student to clearly hear the tuning stimulus, and include tuning the open strings by unisons, octaves, and fifths across the orchestra. [For my recommendations on ensemble tuning procedures see the November 2008 issue of the ASTA journal: The American String Teacher.]

4. **Use of finger pattern drills and a chromatic scale.** Daily warm-ups that utilize finger pattern drills will help solidify hand positions (thus intonation) and introduce variant finger patterns prior to their appearance in literature (extensions, low 2, etc.). A warm-up that includes a one-octave chromatic scale offers daily reinforcement of extensions and/or shifting in the lower positions. (Michael Allen’s *Daily Warm-up for String Orchestra* and *Expressive Technique for Orchestra* by Brungard, Alexander, Anderson, and Dackow both contain excellent finger pattern drills for daily use.)

5. **Be relentless in correcting the collapsed wrist and flat fingers.** Whether beginners or advanced students, poor position almost always results in poor intonation. Collapsing the left wrist or playing with flat fingers will cause the pitch to slide flat. If your students want to grow long fingernails, tell them they can do that on the right hand. The warm-up is the easiest time to observe position problems; students who are corrected can then be double-checked throughout the rehearsal.
6. **Echo-play folk tunes (phrase by phrase).** During the warm-up period, students should echo melodies performed by the teacher. Start by presenting individual phrases of familiar melodies that begin on the downbeat on a common open string (G, D, or A). After several weeks, invite your students to bring in folk tunes, jingles, or other familiar melodies and teach them to the class. Another variant is to have students improvise brief melodic segments (1–2 measures, based on a prescribed set of pitches) and have the class echo each improvisation.

7. **Sing daily to internalize pitch.** Singing demands that students internalize pitches and hear them before they sing (with open strings and finger patterns, string players do not necessarily do this). Use a common round syllable such as *doo*. Start with simple lines from their beginner book or short phrases from the literature. You will be amazed when you hear your students singing their music on the bus ride home from contest.

8. **Use drones to help tune scales and passages in a single key (internalize the key).** Scales are often used in warm-ups and scale tuning can be enhanced by having one section sound the root and fifth while the other sections perform the scale. Pause on various scale degrees and allow students to hear the resulting intervals (consonant or dissonant) and their resolution to the next pitch. Remove vibrato—it warms up the tone, but it also confuses the pitch.

9. **Teach the ear to tune chromatic and diatonic movement.** As a part of your warm-up, ask your students to move up or down by half-steps from a given unison starting pitch according to your instruction. Start in unison and then divide the group in two, with half following your right hand and half following your left. As they move to each new pitch, ask them to tune first with their section, then to the intervals provided by the other sections. After several weeks of tuning intervals, advanced ensembles can be divided into four sections and begin to tune chords. This exercise also works well diatonically (using the degrees of the scale).

10. **Enhance dissonance, relax consonance.** Utilizing the preceding chromatic or diatonic exercise, ask students to play dissonances louder and with wider vibrato. In the same manner, ask them to play softer and with less vibrato when they perceive a consonance. The concept of enhancing dissonance and relaxing consonance is at the root of functional harmony (tension and release) and makes chord progressions more obvious to both the listener and the performer. It is also the basis for the appoggiatura (one of the earmarks of classical period style).
REACTIVE SOLUTIONS TO ENSEMBLE INTONATION

1. **Unify rhythm and articulation.** To increase the odds of pitch accuracy, increase rhythmic accuracy by using pizzicato to clarify rhythmic passages; any incorrect rhythms will jump out from the context. In a large enough section, a wrong pitch performed with the correct rhythm and articulation may be hidden by the rest of the section. Unifying rhythm and articulation will aid in overall audience perception of intonation.

2. **Mark music with meaningful symbols.** Ask students to use markings that illustrate tuning solutions (don’t just circle it). When a chord tone won’t tune, use up or down arrows to indicate which direction the student needs to move (higher or lower). Use the ^ symbol for marking two notes adjacent by half-step. When a note in the key is missed, add a reminder sharp or flat above the pitch (if placed next to the pitch, the student may think it is an accidental and play the note as a natural in its next occurrence). Students can’t mark their music when it is placed in transparent sheet protectors. Give students a grade on markings before each concert.

3. **Shake it up and return home.** When students were performing an out-of-tune pitch, Dr. Louis Bergonzi had them hold the pitch, then slide the finger up and down the fingerboard, and then return to the pitch on his signal. When the entire group has to focus on retuning to a pitch after confusing it, the tuning improves.

4. **Play within the sound of the section leader (unison matching).** Denese Odegaard has each student match the section leader within a given passage. She adds one student at a time until the whole section is playing, and tuning, in unison. This exercise, when used regularly, can build a strong section sound with unified pitch, rhythm, and articulation.

5. **Lessen dynamics, tempo, and articulation to make pitch obvious.** When loud passages won’t tune, rehearse them at mezzo piano so that everyone can hear all chord tones, gradually increasing volume to the proper dynamic. When fast passages won’t tune, rehearse them at a slower tempo and gradually increase the speed with pitch mastery. When staccato passages won’t tune, rehearse them slow and legato, increasing tempo and articulation with proper intonation.

6. **Tune the fermata.** Put a fermata on the downbeat of each measure in a problematic passage and have students tune each. In 4/4 time, once the downbeats are in tune, put a fermata on beat three (or beats one and three). This provides students time to correctly hear and tune the strong beats (where chord changes typically occur).

7. **Tuning within the key.** When rehearsing one section on a particular passage, have the other sections softly play either the root or fifth of the key. Surrounding the section with the open fifth provides a warm, fuzzy, harmonic blanket from which improved tuning is sure to issue.

8. **Remove the melody and tune the accompaniment.** Our ear is drawn to melody; removing it allows us to clearly hear chords and harmonic progressions. Build chords from the root, decreasing the dynamic level on each consecutive chord tone: root, fifth, seventh, third/sixths, seventh/seconds. In dense homophonic passages, analyze the harmony and bring out the root of each chord to enhance the progression.

9. **In pizzicato, build from the bass (loudest to softest).** When playing pizzicato chords, ask the string bass to be the leading voice dynamically, with cello, viola, and violin each playing progressively softer (a “dynamic pyramid” above the bass). What is produced is a warm, rich, full pizzicato that is more sonorous and easier to tune.

10. **Bring out phrase shape to enhance tuning.** The climax of a phrase (dissonance, V7, etc.) should be played louder and with wider vibrato than the beginning and ending of a phrase (consonance, tonic), which should be performed at a softer dynamic and with smaller vibrato. B.R. Henson used to say, “The most beautiful distance between two points is a curved line.” Have students mark an asterisk (*) at the top of each phrase to help define points of arrival. This is particularly helpful to the non-melodic voices that may not see the phrase shape of the melody. Pablo Casals wrote, “Music is an endless succession of rainbows.” In multiple-phrase passages, have students mark the high point of each sequential phrase with increasingly larger asterisks.

While the techniques I present here are my favorite and most often-used, there are certainly other methods that can help you achieve superiority with your ensemble through better intonation.

If you have additional intonation ideas to share, please email me at Michael_L_Alexander@Baylor.edu.

**REFERENCES**

4. B.R. Henson, author personal account, Sam Houston State University, 1984.

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