

**The Development of an Intonation Skills Unit in a Middle School Instrumental
Program**

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Abstract

This study addresses the question of how intonation can be taught effectively in middle school bands. Introducing intonation to middle school band students has often posed a problem for middle school band directors. Many directors wait until high school. This study documents, through assessments conducted during an action research project, the degree to which young instrumentalists are capable of improving this skill. This study has recorded and demonstrated how a teacher can introduce intonation skills within a teaching unit to support student success. The creation of an accompanying teacher review packet with student handbooks and the implementation of a peer-review process are included in this study. Each of the project components focuses on the terminology and processes for tuning each instrument group.

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Introduction

The researcher teaches middle school band at South View Middle School in Cumberland County, North Carolina. At the time of the study, the researcher was in her sixth year of teaching. As she was beginning her third year at the South View Middle School, most of the students under the researcher's instruction were products of her teaching.

Still early in the researcher's career, she realized that there are areas of improvement needed. Previously, intonation was rarely addressed in the researcher's classroom. Colley would ask, "Could the researcher hear when her students were out of tune?" Stephen Colley refers to this question as a "trap." "If the director or teacher that allows poor intonation says 'No,' their qualifications should be questioned. But, if they say 'Yes,' their standard of excellence should be questioned" (Colley, 2006).

When preparing to perform for a concert or contest, the researcher would ask students to play a pitch and she would then instruct them to "push in" or "pull out" at the tuning mechanism. Although this elementary practice allowed the instruments to become closer in tune, the students were not involved in the decision making process. They learned very little about this integral part of music and the researcher never allowed the students to make intonation their own responsibility.

The final push that led the researcher to find a better way to teach intonation came during the previous year as she first took her eighth grade band to the Southeastern Regional District Contest Festival. The students were well prepared and worked with many guest conductors in the preparations for the contest. The guest conductors were very complimentary of the band, except for its ability to play in tune.

Playing in tune, or intonation, is an ongoing process in which a player strives to match the pitch of others in the ensemble during performance (Gale, 2006). In the weeks remaining before contest, the director continued to "work" the band diligently and address intonation as frequently as possible. When the judges' tapes were received, the comments were just as expected. The band executed the music well, yet its members did not yet have the ability to play in tune.

How could this be changed? The director was teaching many concepts with great success, but intonation was holding the band back from achieving the desired standards. Teaching students the skills of intonation was evidently not something that could successfully be done intermittently throughout the year. Therefore, the design and implementation of a structured and scaffolded program of study in the development of intonation skills are proposed for this action research project.

Instrumental performance ensembles such as bands and orchestras introduce young musicians to a variety of skills at the middle school level. One such skill is that of playing in tune. Accurately producing a pitch in performance is an essential task of every member of an ensemble.

The researcher created a unit and accompanying resource materials that can be used by middle school band directors to teach the skills of intonation. The primary goal of the action research project was to show growth of the students in their ability to play in tune. The researcher first assessed the levels of comprehension and tuning skills of each participant in the initial study. Student achievement in these two areas was measured over the two-week workshop.

To receive further feedback about the unit created, the researcher sent a modified version of the unit to the each middle school band director in the Cumberland County School District in the fall of 2006. The packets the directors received included revisions made following the two-week summer workshop as well instructions to provide professional feedback about the unit. The results of both the action research project, as well as the feedback from the band directors, are included in this report.

The researcher sought to answer the question, "As a result of a two-week unit of study to include demonstrations, assessments both written and performing, and motivational musical experiences, in a summer band workshop, to what degree will middle school band students improve their comprehensive understanding of intonation skills and their application of intonation skills?".

The researcher also posed the question, "How do my colleagues teach intonation skills? What strengths and weaknesses do my colleagues see in this unit including demonstrations, assessments both written and performing, and motivational musical experiences?".

Review of the Literature

Schleuter (1997, p.149-150) says that intonation is an outgrowth of tonal audiation. Aural skills are the first step in developing the scaffolded skills associated with playing in tune. Schleuter says that tuning should be introduced in the first month of instruction; otherwise students will accept "out-of-tuneness." Using electronic devices can be helpful, but students can become dependent on them. Using the ear is an important tool in this method.

Conway (2003) has developed a complete unit for the first days in the instrumental music class. It includes step-by-step instruction as to the order in which concepts are introduced. Conway states that music teachers agree that developing the aural skills of a young musician is important, yet it is rarely the focus during the first days of instrumental instruction. Because singing in tune is important to developing a well trained ear, singing should be an integral part of instrumental lessons. Conway also states, "Do not ask beginning students to play a specific pitch on their instrument until they can hear the pitch they are supposed to produce" (p. 29).

Wolbers (2002) agrees with Schleuter and Conway in that students should be singing from the beginning of their instrumental music career. Wolbers suggests that the students should sing all of the exercises before playing them. The author then says that when the students are ready, the teacher should make a game of deciding whether or not the pitches presented are flat or sharp. Then the teacher should introduce the skill of adjusting the instrument accordingly. Wolbers agrees that electronic tuning devices can be helpful but should be used sparingly. "After all, the students most likely have 20/20 eyesight. It is their ears that need improvement!" (p. 28)

The web-based article, "Band Training" (Gale, 2006), breaks down the band section-by-section. The author addresses the pitch tendencies of each instrument and gives suggestions to improve overall intonation. There is also reference made to the importance of using chorales with wind bands. Playing chorales can aid in the learning of correct breathing, phrasing, and intonation.

Much of the outline for the warm-up routine chosen for this study comes from the web-based article, "Warming-up Your Ensemble" (Heron, 2001). In this article Heron admits that most of the sources are not his, but are compiled from an array of experts in the field of instrumental music education. Heron goes on to discuss how warming-up is necessary to focus the minds of the players as well as to warm-up the instrument. Suggested activities for warming-up an ensemble are breathing, scale work, chorales, unison note tuning, and rehearsal-specific activities.

The writer's insecurities about intonation are addressed quite effectively in the web-based article, "Intonation: Bane and Grail" (Colley, 2006). Stephen Colley talks about the ability to play in tune as the "Holy Grail" of all musicians. Performers know intonation is part of their art, but few spend the time needed to perfect their abilities to play in tune, according to Colley.

Many of the sentiments in Colley's article are echoed in the web-based article "Developing Intonation in Brass Instruments" (Lehman, 1983). This article addresses the causes of poor intonation just as much as it offers suggestions to develop good intonation practices. The article focuses on ignorance or indifference as the main causes of intonation errors. Other causes cited are faulty equipment, hearing problems, not listening to good examples of in-tune ensembles, and failure to listen.

The second portion of Lehman's article appears to be more for the euphonium enthusiast. Lehman recommends learning and memorizing the pitch tendencies of each note played on the instrument. Lehman then suggests that the performer should strive for perfection by practicing the adjustments needed to correct the intonation flaws.

Allen (2006) has given a set of guidelines and some points of optimism regarding intonation. In his online article, "Intonation Tendencies of Wind Instruments," Allen explains the tendencies for each of the wind instruments. Allen reminds the reader that all wind instruments have many similarities concerning pitch issues. Temperature, embouchure, and air intensity affect wind instruments in the same ways. Allen recommends that instructors focus on basic principles in large instructional sessions and save pitch tendencies of instrumental groups for sectionals or one-on-one instruction.

As part of the Texas School Music Project, Allen has written another article on the topic of intonation, "Tuning for Intermediate and Middle School Bands" (Allen, 2002). In this article, Allen's advice specifically targets middle school bands, summarizing fundamental but often forgotten facts about tuning. Allen has also included in the article five strategies to use with the younger, less-experienced groups. Allen closes the article by urging teachers to "learn to predict the factors which can cause even the seasoned player to face tuning difficulty"(p.3).

John Darling (2006) urges music educators to teach students that tone is a fundamental part of tuning in his web-based article, "Tuning-Intonation-Tone: They're Player Responsibilities." Darling sympathizes with educators and agrees, "Training our students to listen, make adjustments, and take responsibility for tuning and intonation

can be frustrating and tedious” (p. 1). Darling asks the instructors to “hold on” because the end result is that of a band that can perform better on multiple levels by increasing the students’ capabilities to tune properly initially, and while performing.

Method

To aid in instructing students regarding intonation skills, the researcher's unit modeled proper methods of tuning and included note taking activities and multiple demonstrations. The combination of developing comprehension and related skills of tuning was designed to help the participants improve these skills within a two-week workshop.

The researcher incorporated the students enrolled in the Cumberland County Schools 2006 Summer Music Workshop as part of the study. This was a two-week workshop in which the researcher was the coordinator. Enrollment consisted of thirty-one middle school students, aged 11-14. These students came from eleven of the thirteen Cumberland County Middle Schools. Fifteen of the students recently completed the sixth grade; eleven of the students, the seventh grade; and five of the students, the eighth grade (Figure 1).

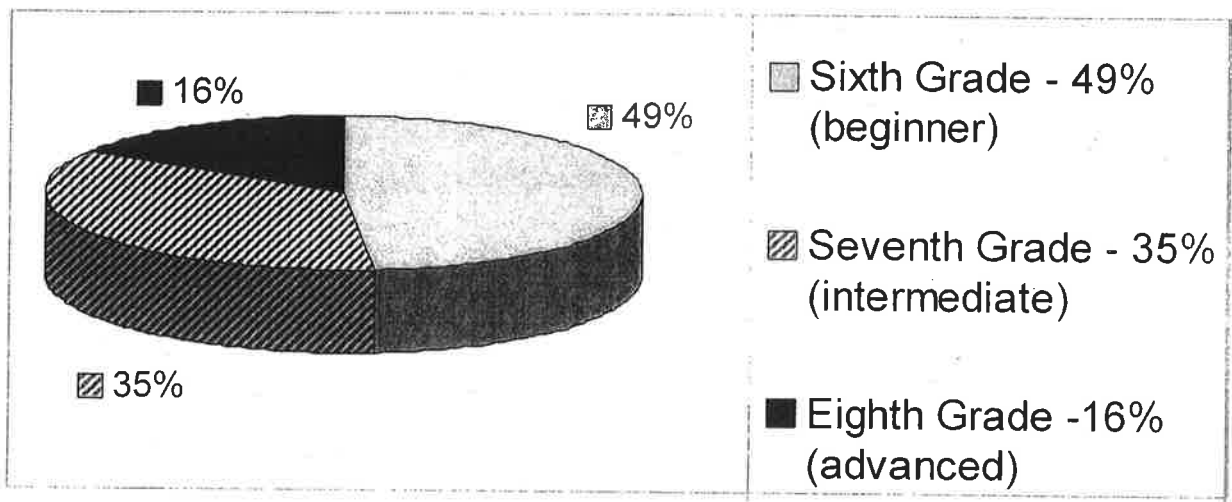


Figure 1. Grades of participants in action research project

The researcher explained the project to all students on the first day of the workshop. Students were given the option to participate, and all parents were asked to sign a release form (Appendix A). One-hundred percent of the students chose to participate, but due to absences and late arrivals, only 22 of the 31 enrolled students, or 71.3 %, completed the project.

The two-week workshop was held at Jack Britt High School, Monday-Friday, from June 19-30, 2006, for three hours. The workshop was not just a study of intonation. This annual clinic offered students a non-auditioned ensemble setting to improve their instrumental music skills. Students prepared literature over the course of the two-week workshop to present at the conclusion of the camp. The added element of intonation was included this year in the form of the action research project conducted by the researcher/coordinator. The intonation study proved to be so successful that the Arts Education Supervisor recommended that we include an element of specific intonation instruction to this annual workshop.

The researcher collected data on the first day of the workshop, through questionnaires, written tests, and tuning exercises. The researcher, over a period of the remaining nine days, introduced and implemented an intonation unit. At the conclusion of the workshop, the students were asked to complete the same assessments that were given to them on the first day.

To encourage the students to give their best effort the researcher used a combination of intrinsic and extrinsic motivators. Intrinsic motivators come from internal experiences (Anderson, 2006). The researcher used praise, compliments, and pride to encourage the students to try their best.

Extrinsic motivators are founded in positive or negative external consequences and rewards (Anderson, 2006). Educators agree that intrinsic motivators are more beneficial in the long term than extrinsic motivators. Maehr, Pintrich, and Linnenbrink (2002) indicate that extrinsic motivators are often unavoidable and wrote, "Eventually, these extrinsic motivators may become internalized"(p362).

Extrinsic motivators were used by the researcher at the camp to encourage the participants to take part in the study. Prizes were awarded by the researcher to those who showed the greatest improvement in written and performance assessments combined. The history of this camp includes efforts to create an atmosphere that is relaxed and enjoyable. Adding the prizes not only encouraged the students but also helped to accomplish this desired climate.

The first day (Monday, June 19, 2006) of the workshop, the researcher thoroughly explained the project to the enrolled participants. The researcher then chose to organize the participants alphabetically in groups of similar size. This was an attempt to allow participants from different schools and from various sections of the band to be grouped together. The participants then received their information packets. Each packet contained an overview of the project (Appendix B), a questionnaire (Appendix C), and an outline of the notes (Appendix D) to be used later in the week.

After all participants completed the questionnaire, they were given the written assessment (Appendix E). Following the written assessment, students were taken one at a time outside the rehearsal room to assess their individual abilities to tune their instruments to a pitch provided by an electronic tuner.

Four staff members assisted the researcher during the Summer Music Workshop. The researcher and one of the staff members demonstrated the tuning activity for the band prior to asking the students to tune. The staff members continued the rehearsal while students stepped out one at a time to tune their instruments.

The pitch "Concert F" was chosen for this activity based on the statements by Garafalo. Garafalo indicates that choosing the perfect tuning pitch for a wind band is not a possibility. "Concert F" can be played on each of the woodwinds with several keys closed giving the instruments a darker sound. Notes performed on woodwinds with few keys closed create airy, sharp pitches if not corrected with the embouchure. Because of their inherent pitch problems, Garafalo does not recommend tuning to these notes. Because "Concert F" is also in a somewhat comfortable range for most of the brass instruments, it works for most of the band.

Tuning each of the instruments to different tuning pitches based on what is needed for each instrument family is ideal (De Stefano, 2006). Because of limited time in rehearsals, this is often not a possibility. If time did allow, tuning each instrument to more than one pitch would have created better intonation throughout the ensemble because it would have ensured that the instruments had been tuned more thoroughly.

As the students produced the pitch on their instruments, they were told to make any adjustments necessary. They could ask for the pitch to be produced up to two additional times after the initial presentation of the tuning pitch. Only four of the thirty-one participants asked to hear the tuning pitch more than once. Participants were instructed to tell the researcher when they felt they were in tune. Most participants were unsure, stating, "I think I am in tune now?" or "Is that right?". Once a participant

indicated that he/she was finished tuning, the participant would play his/her pitch a final time as the researcher recorded the number of cents sharp or flat that the pitch deviated from the electronic pitch. The researcher did not give any instruction at that time as to what each participant should do to make the proper adjustments.

The researcher graded the written assessments (Appendix E) and compiled the data from the running activity. The researcher created a chart to give each participant points for the written assessment and points for the tuning activity (Appendix F, G). These same points were compared to the points earned at the conclusion of the workshop to determine which individuals and team showed the most improvement.

The second day (Tuesday, June 20, 2006), the band warmed up with a breathing exercise, lip slurs, scales, and a chorale. The researcher then began the instruction that would form the basis of the action research project. With the help of student volunteers, the researcher demonstrated the presence of audible "waves" when two instruments playing the same pitch are not in tune. The researcher purposefully adjusted two flutes so that they would be dramatically out of tune. The participants acknowledged that they could hear the waves by nodding their heads when asked. The researcher then adjusted the instruments so that they were closer in tune, but not in tune yet. The participants noticed that the waves were slower as the instruments got closer to being in tune. This activity was repeated with saxophones and trumpets.

Following the participant-demonstration, the researcher conducted the note taking activity. The students used the researcher-created worksheet to aid in this activity (Appendix D). The researcher explained the definitions and various processes

involved with intonation as students took notes. This was the final activity for the first day of instruction in the unit.

The third day of the study (Wednesday, June 21, 2006), began with a review of the previous day's instruction. The instructor asked, again, for more volunteers to demonstrate the audible waves when two instruments are out of tune.

As two staff members prepared to play, students were asked to close their eyes and to raise their hands when they could no longer hear any waves, indicating that the instruments being played were in tune. Four of the students raised their hands significantly early. Seventeen students raised their hands at the appropriate time and the remaining five students that were present that day never raised their hands. This demonstration was conducted three times. The second time the staff members played, twenty students raised their hands at the appropriate time. The final attempt at this demonstration was the most successful with twenty-seven students raising their hands at the appropriate time.

Following the listening activity, the researcher moved to the note-taking activity (Appendix D). The focus for notes on the third day of the workshop was the ten factors that can cause poor intonation (Garafalo, 1996). A discussion was held regarding which of these factors instrumentalists can control and which factors are beyond their control. Students were engaged in the discussion as evidenced by the diligent note taking and appropriateness of questions that were asked. The researcher stressed that even though factors such as acoustics and seating arrangements are at times beyond the control of the individual instrumentalist, these factors must still be taken into consideration when tuning.

The fourth day of the study (Thursday, June 22, 2006), the researcher began with a review of the previous day's activities. Students volunteered to answer review questions posed by the researcher regarding the definitions of intonation, audible beats when tuning two or more instruments, as well as the factors that can affect the practice of tuning.

More listening examples with both staff and student volunteers were conducted as in the previous days. By day four, students were showing greater confidence in these activities as indicated by more students volunteering to aid in demonstrations than on previous days. The increase in participation indicated a greater level of comfort in the activities.

The new material for the fourth day consisted of specific information for each instrument related to "pitch tendencies" (this refers to the notes that are inherently bad on an instrument). Each student was given a sheet for his/her instrument with specific information about the tuning of the instrument, as well as the pitch tendencies for his/her instrument. These sheets were copied with permission from the Garafalo's book, "Improving Intonation in Band and Orchestra Performance" (Appendix H). (See instrument packets in Appendix K for individual instrument tuning sheets).

In order to present this material effectively, students were split into sections and sent to separate rehearsal spaces. The divisions were as follows: flutes, clarinets, saxophones, trumpets, low brass, and percussion. Each staff member was given thirty minutes to present this material to his/her assigned group. The staff also instructed each section on lipping (a technique in which the performer can adjust the pitch by making

small adjustments with the embouchure, breath, or rolling in and out with the mouthpiece).

As the coordinator, the researcher observed the instruction taking place in each group. Students were actively engaged in the activities and were taking notes on the sheets provided. The focus in each group was on the proper way(s) to adjust the instruments for tuning and the minute adjustments needed for pitches on each instrument. By splitting the groups into sections, more one-on-one instruction was available. Students were able to practice lipping and tuning their instruments with immediate feedback from a professional.

On the fifth day (Friday, June 23, 2006), the project continued with reviews of the previous four days. The focus for this day of instruction was to introduce the concept of singing to aid in the audiation of tuning practices.

On the previous day, students in each instrumental section had been given specific instruction and practice on lipping and how to tune their instruments. The researcher attempted this individual tuning activity as an ensemble on this fifth day of instruction. Each section was given a "Concert F" produced electronically by the tuner. The "Concert F" was the same pitch included in the data collection on the first and last days, as well as the pitch with which each section practiced on the previous day. After the ensemble was given its "Concert F," the students made any necessary adjustments to their instruments. Each student then played his/her pitch individually and the band as a whole decided if the students were sharp, flat, or in tune. Although this was time consuming, this activity was essential practice for the students. Guided practice, as stated by Marzano in a publication edited by Brandt, is a way in which "Students

practice their new knowledge or skill under direct teacher supervision. New learning is like wet cement; it is easily damaged. An error at the beginning of learning can easily 'set,' so that correcting it later is harder than correcting it immediately" (Brandt, p. 79).

Following the liping exercise and tuning guided practice, the researcher directed the students to use their pitch tendency chart (Appendix K) to mark the notes that may become out of tune while performing a chorale. The researcher chose to use *Bach and Before for Band* (Newell, 2002) as the text that gave the participants the practice needed through playing chorales. Students were to put a down arrow above notes that tend to be sharp indicating to lip the pitch down, and an up arrow on the notes that tend to be flat that should be raised. By learning to make these changes on slow, chordal chorales, the students have time to make informed choices about the intonation of each note. By using these visual reminders, students can learn to make the changes of these notes on a regular basis.

Instruction continued with students playing a "Concert Bb" scale. Students were then asked to sing the same "Concert Bb" scale on the syllable "La." This was repeated three times, reverting back to the instrumental scale before each sung scale. There were difficulties at first because students were timid. Having attempted this exercise a few times, most students became more comfortable singing as evidenced by the increased in volume of the singing. The boys were more shy than the girls, and the boys were having difficulty matching some of the pitches while singing. This was corrected by spreading the staff members out around the room to sing near students who were having difficulties.

Once the band was singing the scale in unison, the students were instructed to play the scale in a round. In order to play chords that were easier to tune while playing in rounds, the ensemble added the ninth note of the scale and practiced playing the extended scale. The band was then separated into the following three groups: flutes, clarinets and bells; saxophones and trumpets; and low winds. Each group began the scale on the tonic, played each pitch in half notes up to the ninth, and descended back to the original tonic. Each group started its complete scale four beats after the preceding group. The students enjoyed the activity and commented on how "pretty it made the boring scale sound." After most of the students were comfortable playing the scale in a round, the ensemble then sang in a round the same scale with the addition of the ninth. The students were instructed to continue alternating three times playing and singing the scale. At the conclusion, the students were comfortable with this activity as evidenced by the increased participation.

In summary, by the end of the first week of the study, the students were given basic knowledge about intonation and time to practice recognizing when instruments are sharp, flat, or in-tune. Students also had time to practice tuning their individual instruments and to sing and play scales in unison and in rounds. These activities all worked together to train the students' ears and to create attentive students that play in tune.

The second week and the sixth day (Monday, June 26, 2006) began as the researcher conducted a thorough review of the previous week's activities. The learning activity for the sixth day of instruction was for the students to tune from the tuba instead of from the electronically produced sound. To prepare the students for this change, the

students again practiced recognizing the presence of beats when two instruments play out of tune. Previously, this activity had only been done with two "like" instruments. Now the activity combined the tuba with each of the other instruments present. To enhance student engagement in the activity, students were asked to put their thumbs up if the tuning instruments were sharp, down if the instruments were flat, and sideways if the two instruments were in tune.

Tuning to the tuba proved to be more difficult for the upper woodwinds. Students, who previously had been tuning successfully to an instrument the same as their own, or to a tuner, were now not finding success tuning to the tuba. Practice at this activity steadily increased the success with tuning to the tuba.

Day seven (Tuesday, June 27, 2006), the ensemble continued to review all of the activities from the previous six days of instruction. Taking into consideration the results of the written assessment from the first day, the researcher chose to focus on the importance of warming up. The question missed most frequently on the first written assessment was "True or False, It is best to tune before warming up." The researcher had the ensemble tune directly after the breathing exercise rather than after the traditional warm-up. The tuba was tuned and then produced the tuning pitch for the remainder of the ensemble. The band then continued with the normal warm-up including lip slurs, scales, and chorales.

Following the warm-up, the band was asked to tune again. The students were shocked to see how almost every instrument was now tuned higher, or more sharp, than they were when they were tuned before the warm-up. The point was made that it does not do any good to tune an instrument prior to warming-up. The students learned that

materials of which their instruments are made are affected by temperature and that the temperature of those materials will be raised after a sufficient warm-up (hence the authentic definition of the term).

Day eight (Wednesday, June 28, 2006), the researcher reviewed all of the instruction presented over the course of the workshop. This was the last day for review before collecting the Post-treatment data. The ensemble conducted the warm-up and tuning exercises as in previous days. As the ensemble tuned, this eighth day, students were not given any assistance. The tuba tuned to the electronically produced pitch and then the ensemble was asked to tune to the tuba.

Following the tuning activity, volunteers were asked to explain how to tune the various instruments in each section. A final demonstration was done with two instruments tuning to each other, reducing the audible beats. Students were given an opportunity to ask questions about the instruction and activities conducted over the course of the workshop.

Rehearsal continued as usual as the students prepared for the end-of-workshop concert that was to be held on Friday. The final thirty minutes of class that day was reserved for students to work in their assigned teams. The objective of the activity was to study collaboratively for the written portion of the data collection or the tuning activity. The staff assisted as needed.

Motivation, both intrinsic and extrinsic, was also a part of this study. Students were made aware of the prizes offered for improvement in the intonation study on the first day of the workshop. Students were reminded of the prizes at stake before sent into groups for their final review. The staff observed the diligent work as they

monitored the groups. Some groups were reviewing questions with members while others were practicing tuning. All groups were working to help their members to show improvement on the final assessments.

Day nine (June 29, 2006), the researcher administered the Post-treatment test (Appendix I). After the collection of all of the written assessments, the ensemble began its daily routine of warming-up and tuning. The tuning activity was done without the assistance of any staff.

Following the daily warm-up and tuning activities the ensemble continued rehearsing for the concert to be conducted on the last day. The researcher repeated the data collection from the first day for the final assessment.

Aside from the data that was collected, the manner in which the students entered the room showed great improvement from that of the first day. As evidenced by body language on the first day, many of the students entered the room to tune timidly, unsure of what was about to take place. The final collection day, the students entered the tuning room ready to take part in this activity. The students were more decisive when stating that they were in tune. Seventeen of the thirty-one students requested the pitch to be played two or more times as opposed to only the four on the first day.

The researcher used the same chart for the scoring of the post-treatment data as was used at the beginning of the workshop (Appendixes F and G). The researcher determined the winners based on the scores of the individuals and the scores of the group. Prizes were given to all of the participants, but more prizes were given to the team that had the largest increase in points, and to the two individuals that showed the

greatest improvement over the course of the workshop. The scores combined both the written assessment and the tuning activity.

Day ten (Friday, June 30, 2006), the researcher explained that all of the results would be announced during the concert and prizes would be given out at the conclusion of the concert. The ensemble then warmed up for the concert in the same manner it had done each day of the workshop, tuned, and performed.

Prior to the final selection, the researcher explained to the audience the "Intonation Challenge" in which the students had been involved over the course of the workshop. The prizes were announced to the audience and the participants. All students received a certificate (Appendix J) and coupons for ice cream, pizza, and movies. The winning team received extra movie passes and passes to Putt-Putt. The winning individuals received tuners and \$10 gift certificates to a local music store.

After concluding the initial action research project with the Cumberland County Schools Summer Music Workshop, the researcher transformed the original study to be used in a band classroom rather than a workshop setting (Appendix K). Whereas the original study was conducted over a two-week workshop with three hours of daily contact, the new unit was designed for use in a classroom with less than an hour of daily contact. This new unit was sent to each of the middle school band directors in the Cumberland County School District as well as the band director at Albritton Middle School at Fort Bragg. The researcher requested feedback from the directors in an effort to gain reviews from area professionals.

Summary of Results

The questionnaire (Appendix C) given on the first day of the workshop gave the researcher information concerning the musical background of each of the participants. Knowing that the students came from a wide range of band programs in Cumberland County the researcher knew that identifying how much instruction had been given to the students prior to this study was necessary. By collecting this information obtained from the questionnaires the researcher was able to make note of any prior knowledge that may have skewed the data collected. The researcher determined based on the questionnaires that none of the participants were at a measurable advantage over any of the other participants.

The outcome results from the questionnaire indicated that three of the thirty-one participants, or 10.33%, took private lessons. Based on the results these students did not demonstrate any advantage over any of the other participants. Twenty-six percent of the students indicated that their home band director never addressed intonation in class. Twenty-two percent of the participants indicated that their home band played chorales regularly as part of a warm-up.

The students were asked to assess their own level of comfort completing tasks related to tuning. Table 1 shows the averages of responses given from all participants. Figures 2-5 offer visual depictions of the responses to these questions. Because the researcher was not completing this action research with her own students, it was important to gain an understanding of the level of experience each participant had with intonation and tuning activities. This data was important to take into consideration when examining the final data review.

Table 1

Results from Student Questionnaires

Question	Response	Response	Response	Response	Response	Response
	Poorly	Not Very Well	Well	Very Well	Extremely Well	Don't Know
Tune to a tuner	11.1%	0%	11.1%	22%	14.8%	40.7%
Tune to a tuba	7.4%	3.7%	7.4%	7.4%	11.1%	62.9%
Adjust while tuning	7.4%	11.1%	14.8%	18.5%	14.8%	33.3%
Tune "tendency" pitches while playing	3.7%	3.7%	22.2%	7.4%	14.8%	48.1%

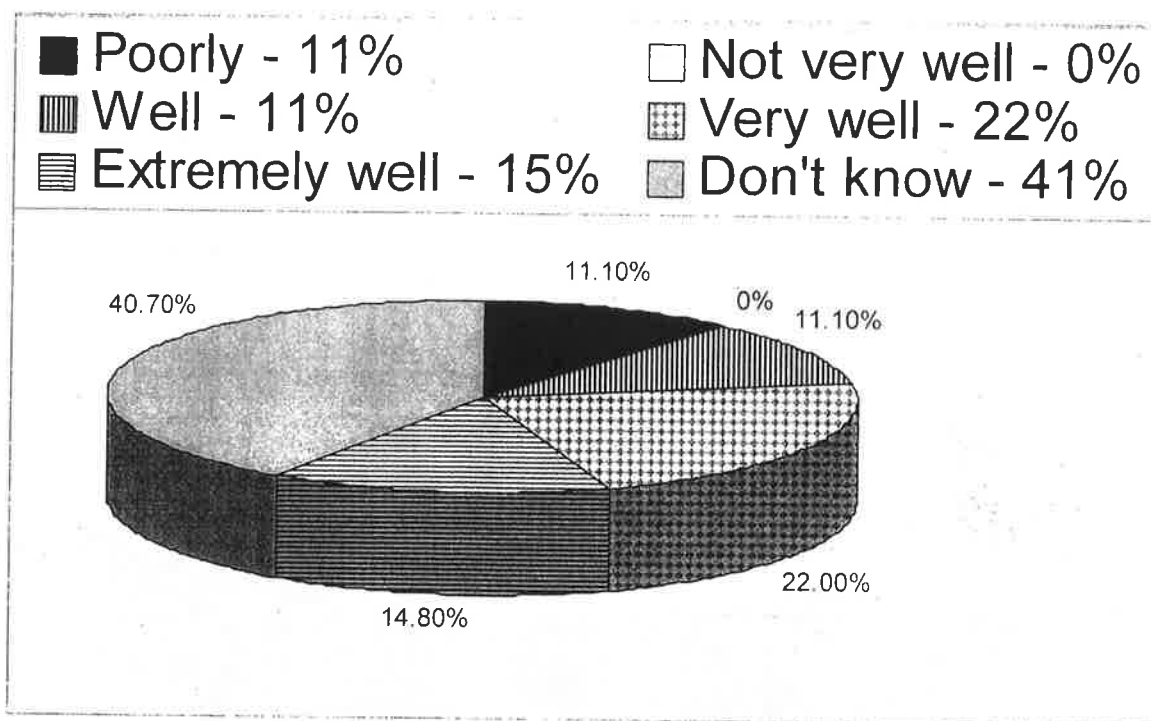


Figure 2. Results of student self-assessment questionnaire with regard to student perceived ability to tune to a tuner.

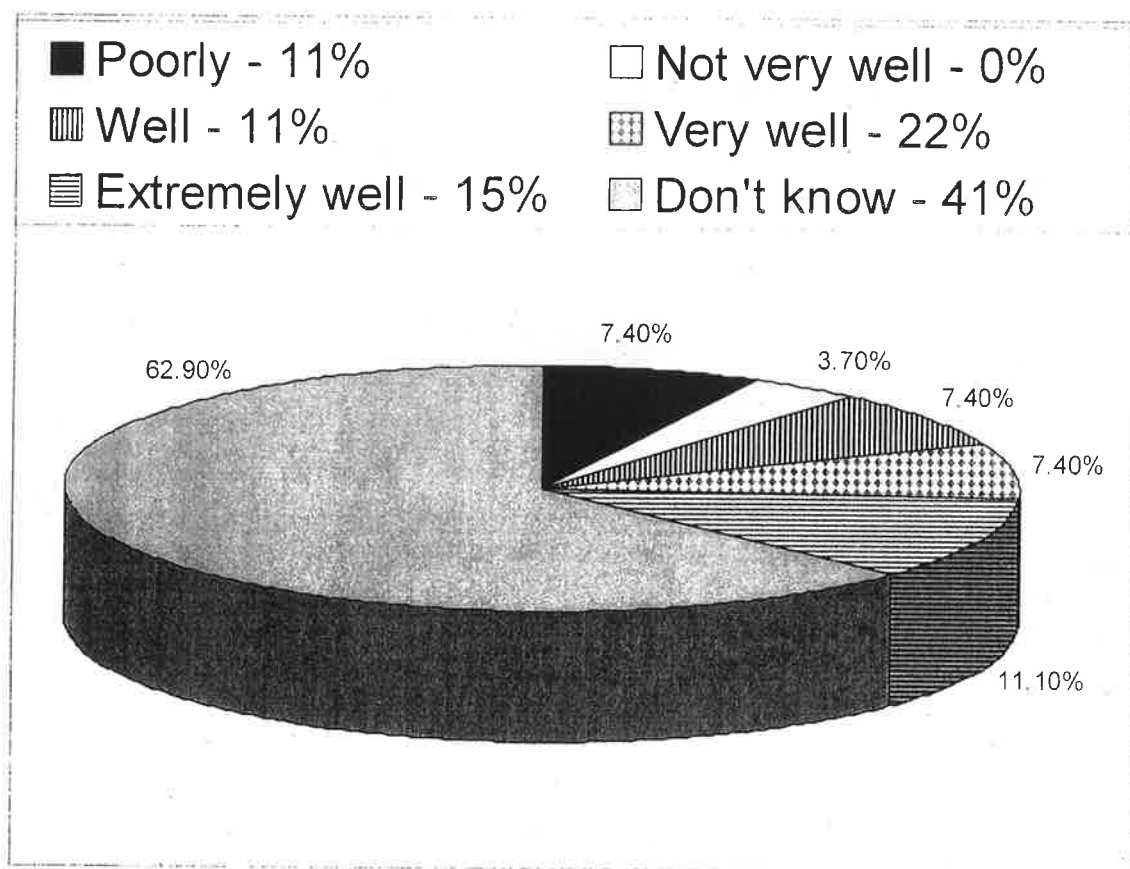


Figure 3. Results of student self-assessment questionnaire with regard to student perceived ability to tune to a tuba.

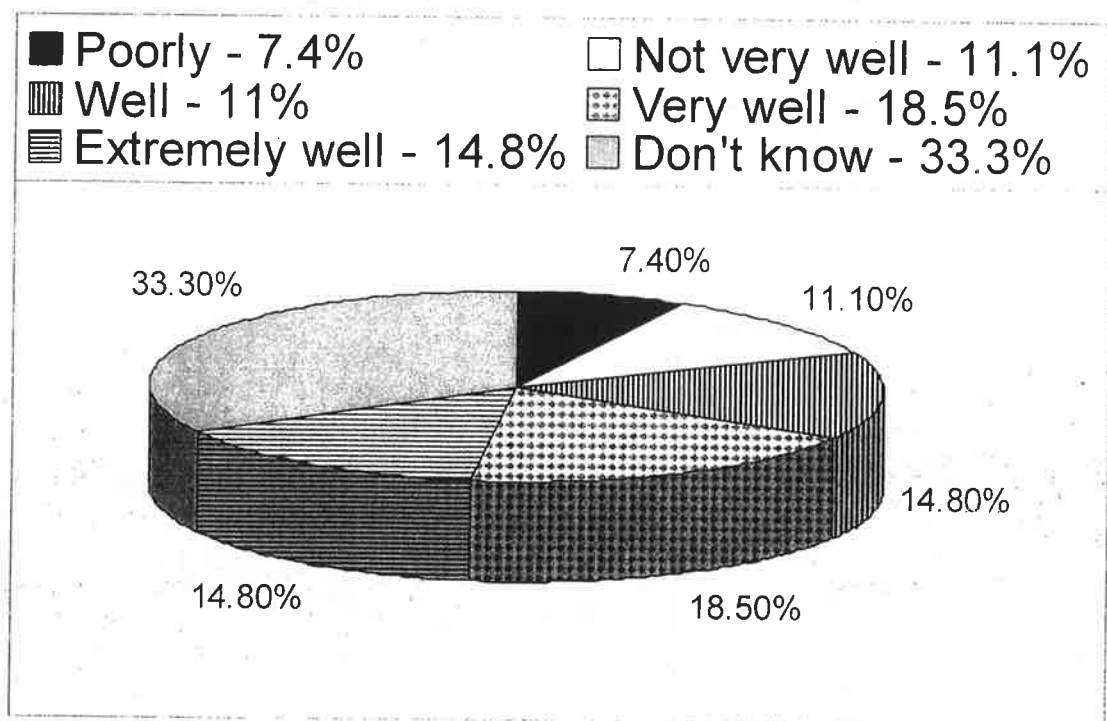


Figure 4. Results of student self-assessment questionnaire with regard to student perceived ability to adjust intonation while playing.

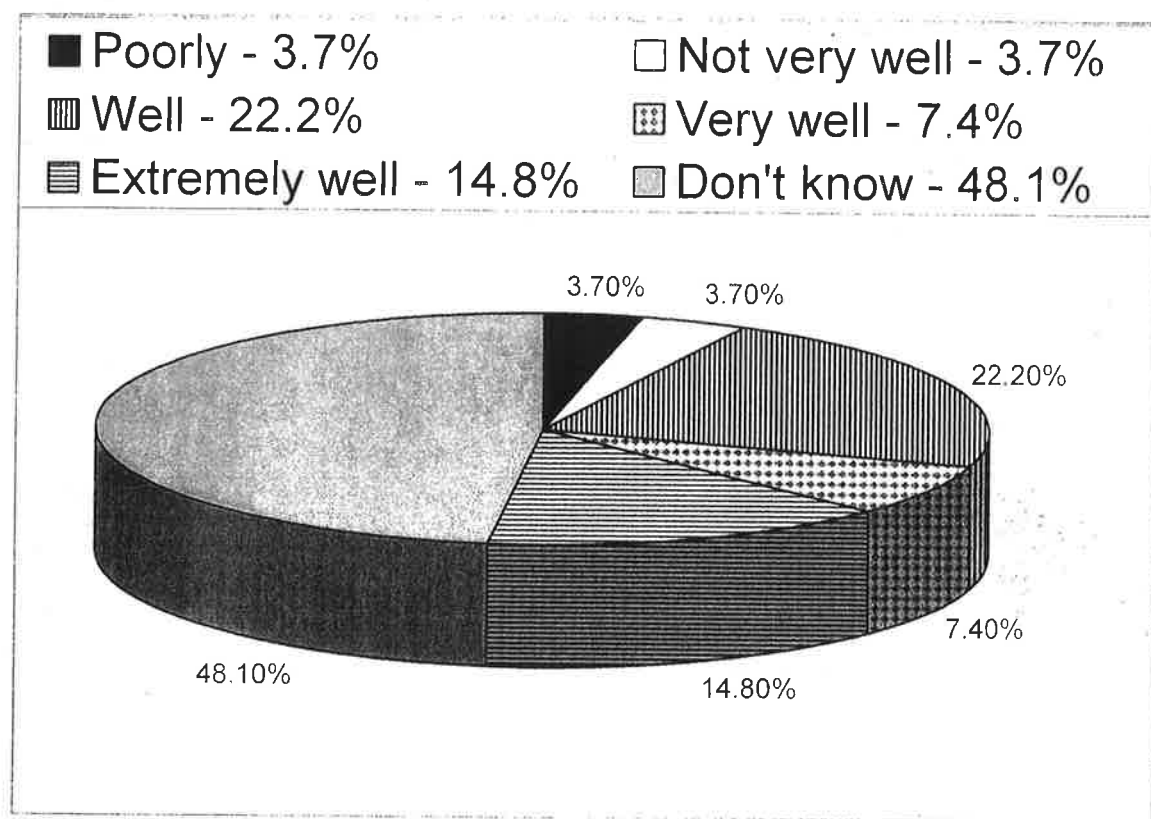


Figure 5. Results of student self-assessment questionnaire with regard to student perceived ability to tune “tendency” pitches while playing.

Figure 6 compares the results from the pre-treatment tuning exercise and the post-treatment tuning exercises. Seventy-seven percent of the students completing the study improved in their ability to tune their instrument to an electronically-produced pitch. As previously stated, due to absences and late arrivals, only 22 of the 31 students at the workshop have complete data available. This is the reason for missing participant data in the Figures 6 and 7.

Twenty-three percent of the participants, or five students, decreased in their ability to tune their instruments accurately. All of these students were absent two or more days from the workshop. By not attending all of the days of the workshop, these students missed out on viewing demonstrations and practicing the methods introduced in the unit.

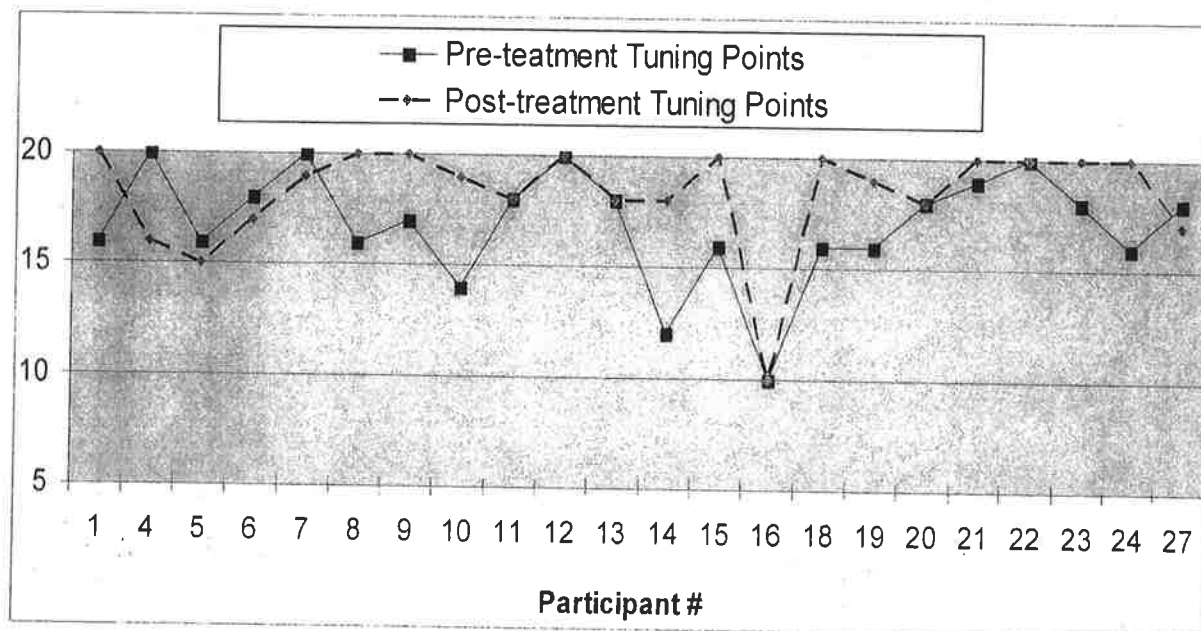


Figure 6. Points earned on pre-treatment and post-treatment tuning activities. Points were determined by “cents” sharp or flat. (Appendix F) Student absences are the cause of missing participant data.

Figure 7 shows the results from the pre-treatment written assessments (Appendix E). One-hundred percent of the students who completed both written assessments improved on the final written assessment as compared with the pre-treatment written assessment. Therefore, these results document an increase in the participants' understanding of tuning skills as a result of the action research project activities

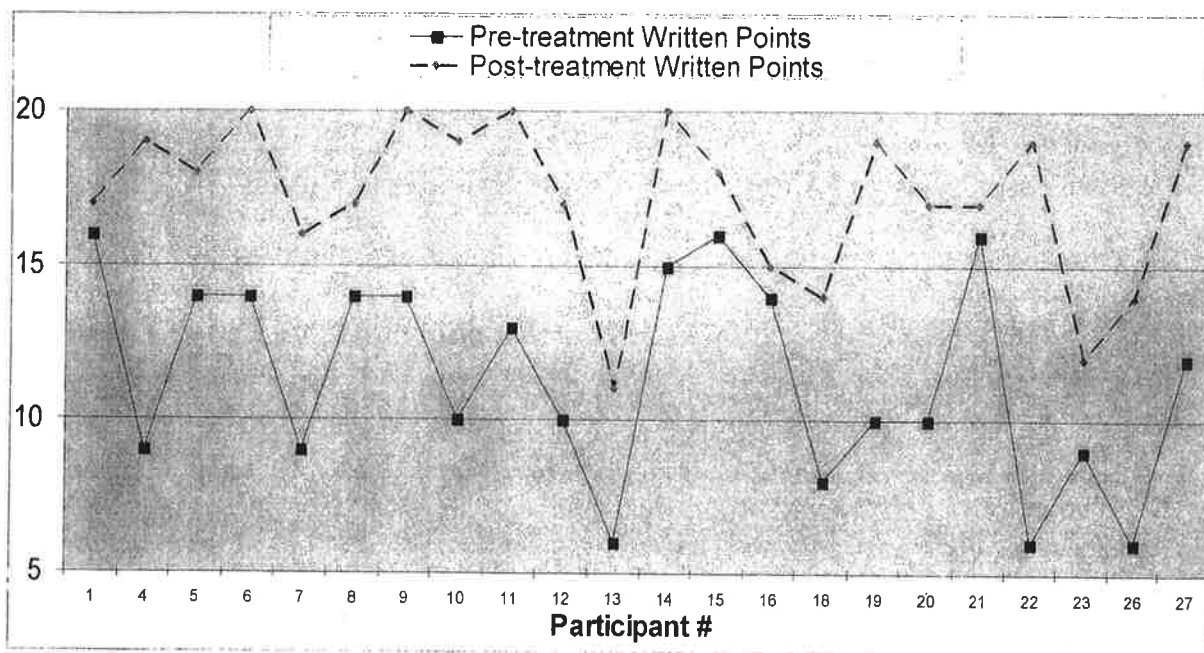


Figure 7. Points earned on Pre-treatment and Post-treatment written assessments. Points earned were determined by grades received on written assessment. (Appendix G) Student absences are the cause of missing data.

To examine more closely how this project can affect individual students, the researcher focused on three of the participants as a sub-group. The three students the researcher chose were from three different schools, each completing different grades and playing three different instruments.

Participant #1 was a male, alto saxophone player who recently completed the eighth grade at Anne Chestnut Middle School. Participant # 1 indicated on his questionnaire that he does not take private lessons. He also indicated that his "home" band tuned everyday and that his "home" band played chorales everyday. When asked to rate his ability to tune, participant #1 had an average response of 4 on his questionnaire. This response indicates that he has had instruction related to tuning. This also indicates that #1 has had experience tuning to a tuner, tuning to a tuba, adjusting intonation while playing, and adjusting tendency pitches.

Participant #1 earned sixteen out of twenty points on his written assessment that he took on the first day of the workshop. Participant #1 answered all ten of the "Fill in the Blank" questions and four of the six "True or False" questions correctly. The short-answer section proved to be the most difficult initially for all of the participants. Students were asked to respond to the prompt with a full paragraph. The prompt asked what factors affect tuning and staying in tune for the student's specific instrument. Participant #1 received two out of the four possible points on the short answer section. He did not answer in complete sentences, as the prompt demanded, and he only listed two factors.

On the final written assessment, participant #1 earned seventeen out of twenty points. Participant #1 again answered all ten of the "Fill in the Blank" questions correctly. He answered five of the six "True or False" questions correctly, improving

from the initial assessment by one question. The short-answer section was again incomplete for participant #1. Participant #1 did not answer in complete sentences, nor did he give specific examples of tuning difficulties for his instrument.

Participant #1 was twenty cents sharp when he tuned in the tuning session on the first day. He listened to the pitch and then played his pitch. When he played his pitch the first time he was about five cents sharp. He then chose to push in his mouthpiece, resulting in an even sharper pitch. Participant #1 then played the pitch again and stated that he thought he was then in tune. At that point, participant #1 was twenty points sharp. He did not ask for the tuning pitch to be played again, as was suggested in the demonstration.

On the final day of the data collection, participant #1 tuned his saxophone correctly. After listening to the tuning pitch provided, he played his "Concert F." At that point he was about ten cents sharp. He pulled out his mouthpiece slightly and then asked for the tuning pitch to be played again. He played his tuning pitch again. At this point he stated that he was in tune. The reading on the electronic tuner also indicated that #1 was in tune.

Participant #10 was a male, tenor saxophone player who recently completed the sixth grade at Pine Forest Middle School. Participant #10 indicated on his questionnaire that he did not take private lessons. Based on the responses of the questionnaire the researcher determined that #10's "home" band addressed tuning several times a year, and that his "home" band played chorales several times a month. Participant #10 stated on his questionnaire that he did not know how to tune to a tuner, tune to a tuba, adjust tuning while playing, or tune "tendency pitches" while playing.

Participant #10 earned ten out of twenty points on the initial written assessment. Participant #10 answered four of the ten "Fill in the Blank" questions correctly and all of the six "True or False" questions correctly. He did not receive any points for the short-answer questions.

On the final written assessment, #10 improved his written assessment score from ten points to nineteen points on a twenty-point scale. He answered all of the "Fill in the Blank" questions and five of the six "True or False" questions correctly. He received the full four points on the short-answer section. Participant #10 answered in complete sentences and listed four specific problems and solutions to tune his tenor saxophone.

During the initial tuning activity, #10 stated he was in tune when he was actually thirty points sharp. He played his tuning pitch and then asked to hear the electronically produced pitch again. He paused, played his tuning pitch again, and stated that he was in tune. He did not adjust his tenor saxophone at all during the initial tuning activity.

At the final assessment, the electronic pitch was played for participant #10. When he played his tuning pitch, he was about twenty-five cents sharp. Participant #10 said, "Hmm, I'm pretty sharp." Participant #10 then pulled out his mouthpiece and asked to hear the tuning pitch again. He played his tuning pitch a final time and stated that he was now in tune. At the end of the workshop, #10 stated that his tenor saxophone was in tune when it was actually about five cents sharp. Although not perfectly in tune, #10 was much closer than he was on the first day of the workshop. This was an improvement from the tuning activity of the first day.

Participant #12 was a female, trumpet player who recently completed the seventh grade at Lewis Chapel Middle School. Just as #1 and #10 indicated on their

questionnaires, #12 also indicated that she did not take private lessons. Participant #12 answered that her "home" band never addressed tuning, and her "home" band never played chorales. Participant #12 had an average response of a 4 when answering the questions indicating her level of ability to tune. This indicates that #12 has had experience tuning to a tuner, tuning to a tuba, adjusting intonation while playing, and adjusting tendency pitches.

Participant #12 received ten out of twenty possible points on her initial written assessment. She answered only two of the ten "Fill in the Blank" questions and five of the six "True or False" questions correctly. Participant #12 received the full four points for the short-answer question.

On the final written assessment, #12 earned seventeen out of the possible twenty points. She answered nine of the ten "Fill in the Blank" questions and four of the six "True or False" questions correctly. Participant #12 received the full four points on the initial assessment and on the final assessment. Although her score did not increase because she was at the full 4 points initially, her response included different information than on the first assessment. On the initial written assessment, #12 mentioned information specific to the trumpet. Participant #12 answered the short-answer section of the assessment with more information pertaining to intonation with regard to the ensemble. Both answers were correct, although the researcher took note that she included new information on the final assessment.

Participant #12 tuned her trumpet accurately on the initial tuning activity as well as on the final tuning activity. She received the full twenty points for each activity. During the initial activity, she listened to the electronically produced pitch, played her

"Concert F," recognized she was sharp, and made adjustments. She pulled out her main tuning slide slightly and asked to hear the tuning pitch again. When she played her pitch the second time she was in tune and stated as such.

On the final tuning activity, #12 mirrored the actions of her initial tuning activity. She listened, played her pitch, adjusted, listened again, played again, and stated that she was in tune. The accuracy with which #12 tuned during both activities was contradictory to what the researcher expected given the information she supplied on the questionnaire. Although #12 indicated that she felt comfortable tuning, she responded that her "home" band did not ever tune nor did they play chorales. She also indicated that she did not take private lessons.

By studying the progress of these three participants, the researcher was able to examine a subset that offered another perspective on the unit that was created. These students showed that with the demonstrations and activities included in the unit, the ability to tune an instrument could increase in a short amount of time. These three students also demonstrated that the knowledge offered in the instructional portion of this unit can aid in the both the written assessment and the tuning activities. The results of the progress made of these three participants are located in figure 8.

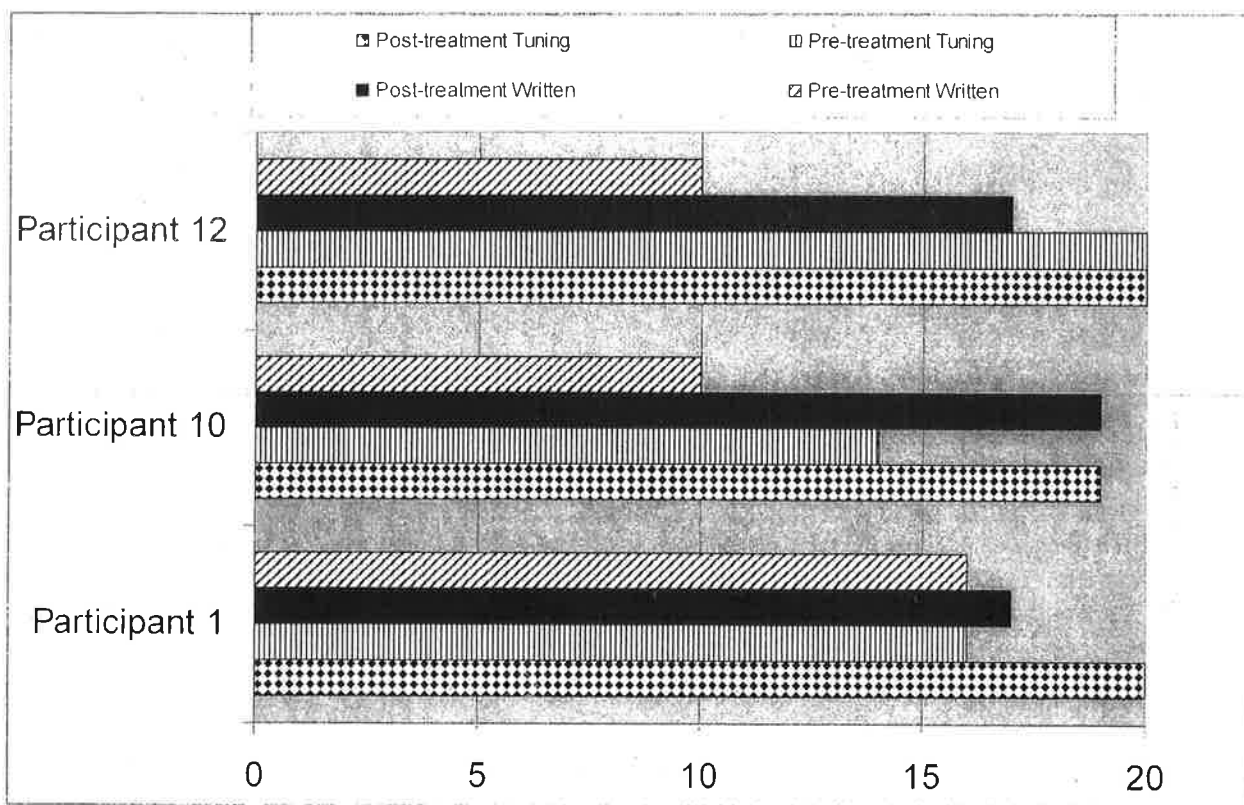


Figure 8. Progress displayed of the three participant sub-group. Points were determined by "cents" sharp or flat and grades on written assessments. (Appendixes F and G)

Nine of the thirteen band directors receiving the professional review packet returned the questionnaire as requested by the researcher. On the questionnaire, the teachers responded to the frequency with which they incorporated certain tuning activities into daily drill. The questionnaire then asked the teachers to describe briefly their methods of teaching intonation skills, to identify the strengths and weaknesses of the unit the researcher created, and to provide any additional comments.

The results of the questionnaires regarding when teachers introduce intonation skills mirror some of the problems indicated by the research encountered when preparing the unit. Many of the teachers completing the questionnaire indicated that they do not introduce tuning as a regular part of the band rehearsal to their beginners. Lehman says, "The players and bands who do care are slow to learn good intonation because that is the last thing a band or individual player is taught" (p. 1). This was the situation with the researcher, as well as many of the teachers that responded to the questionnaire. As the questionnaires and the research show, teachers rarely start intonation skills with their beginners. This is counter to the outcomes of related research with regard to when teachers should implement intonation skills.

Conway (2003) tells music teachers, "When readiness skills are implemented in the instrumental music classroom, good rhythm and intonation can be part of the band and orchestra experience from day one!" (p. 31).

The unit created by the researcher offers skills, demonstrations, and instruction for band students of all ages, including beginners. Table 2 shows how teachers responded to the ways in which intonation skills are implemented in their classes.

Table 2

Responses of Teacher Review on Personal Practices

0 = not applicable 1 = never 2 = seldom 3 = sometimes 4 = often 5 = always

Question #	Question	Average of Responses
1.	I teach intonation skills to my beginner students.	3.2
2.	I teach intonation skills to my intermediate students.	4.1
3.	I teach intonation skills to my advanced students.	4.6
4.	My beginning students practice a regular tuning routine.	2.4
5.	My intermediate students practice a regular tuning routine.	3.6
6.	My advanced students practice a regular tuning routine.	4.4
7.	We use the same routines to tune my students before concerts that we use in class when we tune.	4.3
8.	My students play chorales.	2.5
9.	I teach intonation as a unit of study in my classes.	2.2
10.	I teach intonation skills little by little as I see the need in my classes.	3.8
11.	I use singing when teaching intonation skills.	3.1
12.	I use written assessments when teaching intonation skills.	1.6

Six of the nine teachers indicated on their reviews that they sometimes introduce intonation skills to their beginning students. One teacher indicated that he seldom introduces intonation skills to his beginner students. All seven of these teachers commented that the unit was well organized. In personal conversation with each of these teachers, the researcher learned that all of the reviewers planned to implement this unit with their beginner, intermediate, and advanced students. Table 3 records the comments made by the teacher reviewers when asked to identify the strengths in the intonation skills unit.

Table 3

Responses of Teacher Review on the Strengths of the Unit

Reviewer #	Comments
Reviewer #1	Organized in a rational, orderly fashion. Gives specific remedies to specific problems, once they have been identified.
Reviewer #2	The unit was very detailed with precise directions and explanations for each activity. The project was well planned and thought out with great examples for students. Bravo!
Reviewer #3	Makes students aware of intonation.
Reviewer #4	Having something the kids can study and use as a reference for what they are trying to accomplish. Having the students getting used to singing will greatly improve their aural skills.
Reviewer #5	Well organized, logical sequence, active engagement, repetition.
Reviewer #6	Good progressive steps
	OK individual instrument info (could simplify for middle school)
	Cute flat/sharp signs.
	Good intonation notes outline for students.
	Good factors that affect intonation page
	Good chorale (thanks!)
	Demo a good idea
	Thumbs up or down a super idea
Reviewer #7	The unit very well covers intonation tendencies on various instruments

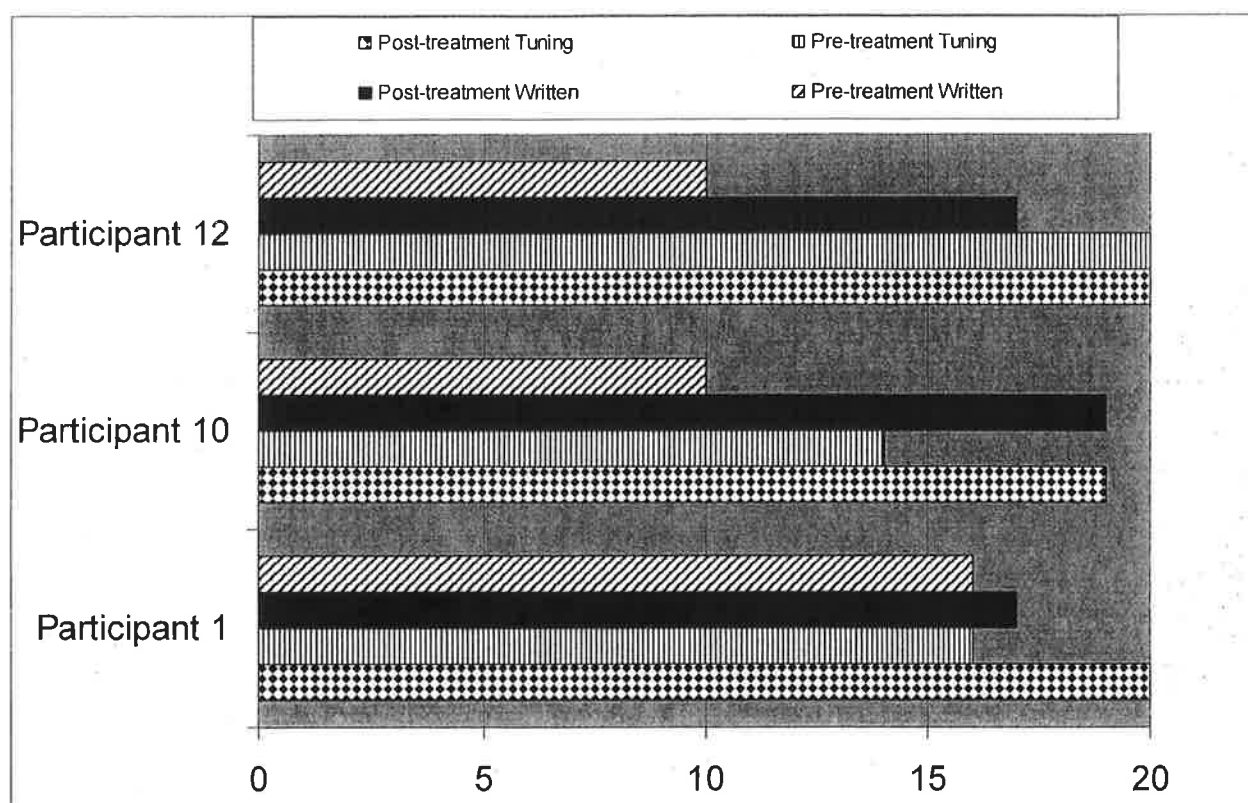


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	Good factors that affect intonation page
	Good chorale (thanks!)
	Demo a good idea
	Thumbs up or down a super idea
Reviewer #7	The unit very well covers intonation tendencies on various instruments

	and various techniques to correct it.
Reviewer #8	Great ideas. I noticed that none of these take very long to do, which is a major factor in middle school for many reasons. I liked having different demonstration.
Reviewer#9	Specific intonation for every instrument.

The researcher asked each of the teachers reviewing the unit to identify any weaknesses associated with this intonation skills unit. Table 4 displays comments on weaknesses in the unit as identified by the teacher reviewers.

Table 4

Responses of Teacher Review on the Weaknesses of the Unit

Reviewer #	Comments
Reviewer #1	Assumes students will develop an "ear" for hearing intonation problems.
Reviewer #2	None at this time.
Reviewer #3	I wish a chorale would be suggested for each grade level.
Reviewer #4	That would be hard to pick. I guess I wish it had more chorales included.
Reviewer #5	None seen – looks good
Reviewer #6	Could include a quiz
	Each day too much info. Would take 30 minutes at least. Could break into almost 2 weeks or all period.
	On the factors chart you could add arrows. I didn't get the idea that one column, then the solution in the other column.
	My students don't "skim over." We would have to take the time to read out loud.
Reviewer #7	I think that this unit could be too time consuming for beginners, but could be useful for 2 nd or 3 rd year players.
Reviewer #8	I didn't notice any weaknesses.
Reviewer #9	In a mixed class, some students will not be patient enough to wait.

The teachers participating in the professional review of the study were asked to provide any additional comments regarding the unit. The comments given are located in Table 5.

Table 5

Responses of Teacher Review on Any Additional Comments Regarding the Unit

Reviewer #	Comments Made By Reviewer
Reviewer #1	None
Reviewer #2	I would love to make this project into a booklet. I bet you could sell this item! I would buy it! Great job! A+.
Reviewer #3	I really enjoy the lesson.
Reviewer #4	This is a very valuable teaching tool. I am planning on implementing it into my class' studies.
Reviewer #5	None listed.
Reviewer #6	Good luck
Reviewer #7	None listed.
Reviewer #8	I really appreciated the instrument-specific handouts for tuning, etc.
Reviewer #9	None listed.

Conclusions

The researcher has now implemented this unit on three occasions. Once with all the South View Middle band students in the 2005-2006 school year, once at the Cumberland County Schools Summer Music Workshop, and once with her 2006-2007 South View Middle sixth grade beginning students. The researcher has experienced the rewards associated with the unit by incorporating it in her band classes. Receiving the feedback from her peers has been added affirmation of the success and potential of this unit.

At the Summer Music Workshop, the students and staff had the benefit of a percussion instructor. With this benefit, the percussionists were able to learn the process and techniques involved in tuning timpani. Those students had individual practice time as a group and with the percussion instructor. Unfortunately, none of the band programs with which the researcher have worked have had a percussion instructor available to them during the regular school day.

The researcher encountered difficulties at times when asking the other staff members to assist in the study during the Summer Music Workshop. The staff members wanted to adjust or change the lessons to fit the methods they used in their classrooms at their home schools. The researcher had to continually remind the staff members that this was for an action research project in which researched materials and theories were being tested. Most of the staff members commented at the end of the workshop that they were going to try some of the techniques implemented in the "Intonation Challenge."

The researcher concluded the study by sharing the results with her colleagues in her school system. The students in the two-week study did increase both their ability to

tune, and their comprehensive understanding of intonation. Figures 9 and 10 show the increases in the average score in both areas.

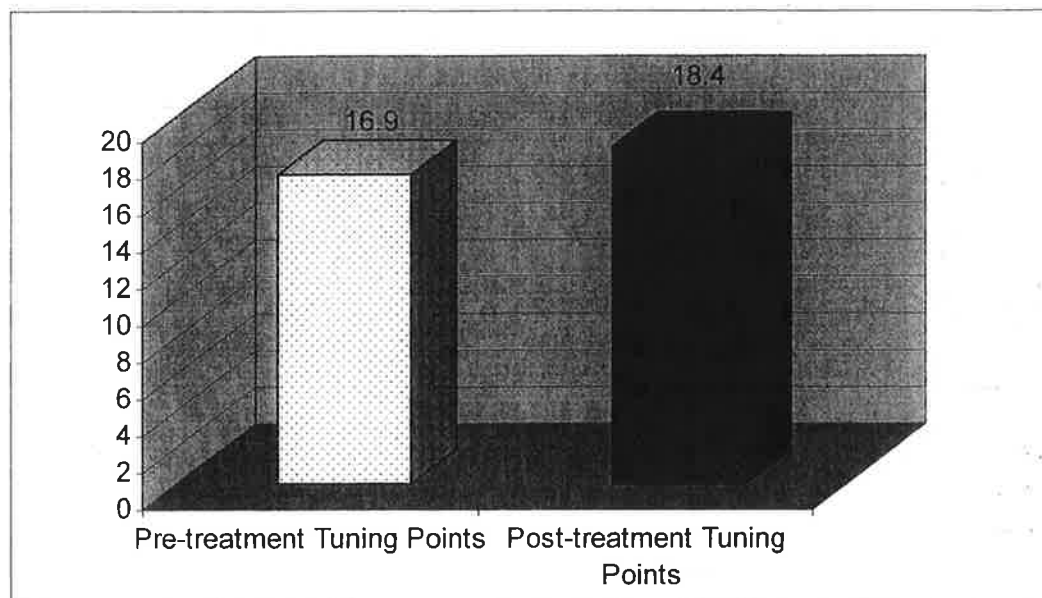


Figure 9. Average increase in points earned from tuning activities. Points were determined by “cents” sharp or flat. (Appendix F)

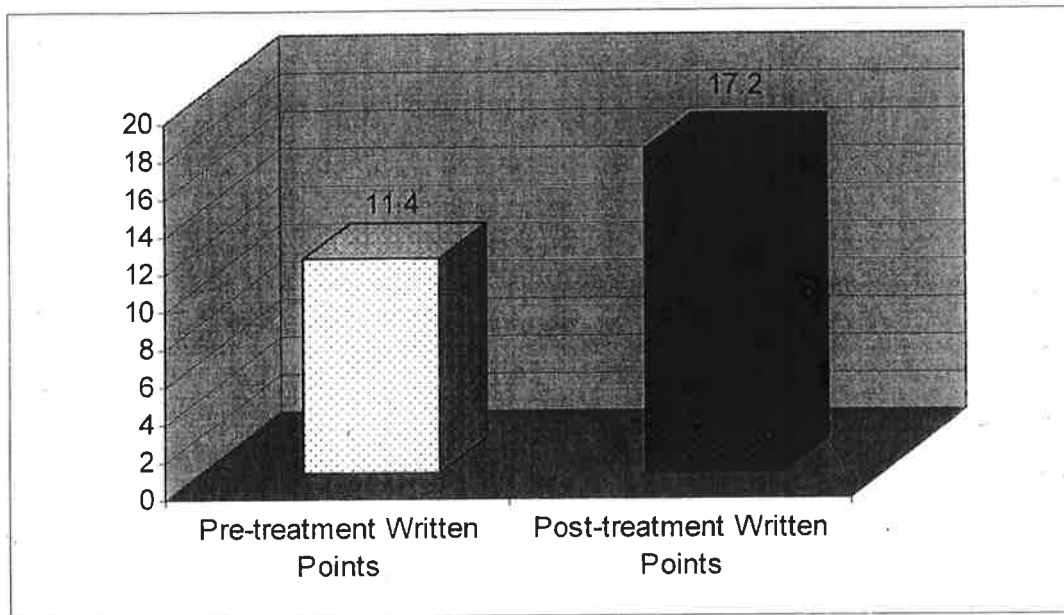


Figure 9. Average increase in points earned from written activities. Points were determined by grade on written assessments. (Appendix G)

Recommendations

The recommendations in this section emerged from the researcher's own experiences and peer review. Table 6 offers recommendations from the researcher about the concerns presented in the peer review portion of the study.

Table 6

Response from Researcher Regarding Peer Review Comments

Reviewer #	Comments	Response from Researcher
Reviewer #1	Assumes students will develop an “ear” for hearing intonation problems.	Continue offering guided practice for those showing difficulty.
Reviewer #6	Could include a quiz	The unit does include a quiz (Appendix E).
	Each day too much info. Would take 30 minutes at least. Could break into almost 2 weeks or all period.	Teachers have flexibility to adjust instruction to fit their classes. The researcher recommends covering the information in a shorter amount of time as an intensive study.
	On the factors chart you could add arrows. I didn’t get the idea that one column, then the solution in the other column.	Researcher will add horizontal lines to make this chart easier to read.
	My students don’t “skim over.” We would have to take the time to read out loud.	Teachers would have flexibility to read aloud, or could have students read silently.
Reviewer #7	I think that this unit could be too time consuming for beginners, but could be useful for 2 nd or 3 rd year players.	The unit was designed to introduce intonation to beginning, intermediate, and advanced instrumentalists.

Reviewer #9	In a mixed class, some students will not be patient enough to wait.	Individual instrumental instruction can be done as after-school workshops. This would relieve the teacher from worrying about the instruments being neglected during each individual instrument instruction section.
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When implementing this program in a band program where a percussion instructor is not available, the researcher recommends that the percussion students become "judges." The students that are demonstrating and tuning their instruments will rely on the percussionists to provide feedback. Having the percussionists act as "judges" will ensure their participation during this unit.

The researcher recommends that middle school teachers introduce intonation skills in the first year of instruction. The methods introduced in this study presented tuning skills and related information to beginning, intermediate, and advanced middle school instrumentalists. The results of this action research project affirm that young instrumentalists can improve in their abilities to demonstrate a comprehensive understanding, as well as to tune their instruments.

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Release Form

The University of North Carolina at Pembroke
Permission to Use Student Material; and Images in Videotapes
in a Graduate Thesis Research Project Entitled:
The Development of an Intonation Skills Unit in a Middle School Instrumental Program

As a student in the School of Graduate Studies at The University of North Carolina at Pembroke (UNCP), I am requesting permission to use student materials and videotapes that will be used in a thesis research project. Students will never be identified by their names in the materials or tapes. The final product is not about the students, personally, but is about the teaching methodology for improving intonation skills. The work and any related exhibitions or publications are intended for the professional development of teachers.

Rebecca M. Bryant
 Rebecca M. Bryant
 South View Middle School
 4100 Elk Rd., Hope Mills, NC 28348
 910-424-3131
 rb0008@uncp.edu

☐ I give permission for my son/daughter to participate in the research project, as described above.
☐ I give permission to the researcher to use student materials and videotapes as documentation for her graduate research project thesis.

Student's Name _____

Signature of Parent or Legal Guardian _____ Date _____

UNCP Supervising Professor:

Janita K. Byars, Ed. D.
 Janita K. Byars, Ed. D.
 Associate Professor
 Music Department Chair and Director of the Graduate Music Education Program
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 2465 Gillespie St., Fayetteville, NC 28306
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 lydias@CCS.K12.NC.US

Cumberland County Schools Summer Music Workshop

2006 Intonation Challenge!

As a student in the School of Graduate Studies at The University of North Carolina at Pembroke (UNCP), I am conducting a thesis research project. Students will never be identified by their names in the materials or tapes. The final product is not about the students, personally, but is about the teaching methodology for improving intonation skills. The work and any related exhibitions or publications are intended for the professional development of teachers.

Each student in the camp will be assigned to a "team". We will spend a small amount of time daily learning about intonation. There will prizes awarded to the *team* that shows the greatest amount of improvement over the course of the two weeks. There will also be prizes for the *individual* that shows the greatest improvement over the course of the two weeks.

Intonation is a skill important to all instrumentalists. It is our hope that this challenge will help all the participants learn the basics of tuning their instruments. We also hope we can help band teachers learn new, exciting ways to teach this skill in their classes.

We hope you learn something, and have fun this summer!

-Mrs. Becky Bryant

Participant # _____

Intonation Questionnaire

1. What grade are you in? _____
2. What instrument do you play? _____
3. How many years have you been playing this instrument? _____
4. Do you take private lessons? _____
5. How often does your "home" band address tuning?
every day once a week several times a month several times a year never
6. How often does your "home" band play chorales, (slow, chordal selections)?
every day once a week several times a month several times a year never

Please rate *your* ability to do the following tasks**1 being not very well, 5 being extremely well.**

- | | | | | | | | |
|----|---------------------------------------|---|---|---|---|---|------------|
| 6. | Tune to a tuner | 1 | 2 | 3 | 4 | 5 | don't know |
| 7. | Tune to a tuba | 1 | 2 | 3 | 4 | 5 | don't know |
| 8. | Adjust tuning while playing | 1 | 2 | 3 | 4 | 5 | don't know |
| 9. | Tune "tendency" pitches while playing | 1 | 2 | 3 | 4 | 5 | don't know |

Intonation Notes Outline

Intonation is _____

Sharp means _____

Flat means _____

When two instruments play simultaneously and the beats are fast, _____

When two instruments play simultaneously and the beats are slow, _____

When you are sharp, _____

When you are flat, _____

To make your instrument smaller, _____

To make your instrument larger, _____

Tune with your _____

Ten Factors that Affect Intonation:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

<u>WORD BANK</u>				
Fast	Smaller	Larger	Sharp	Pull out
Intonation	Ears	Slow	Push in	Flat

1. _____ is the degree to which a pitch is accurately produced in performance, especially among the players in an ensemble.
2. _____ means incorrectly tuned **above** the correct pitch.
3. When two instruments play simultaneously and the “beats” are _____ it means the two instruments are **VERY out of tune**.
4. _____ means incorrectly tuned **below** the correct pitch.
5. When you are **flat**, you must make the instrument _____.
6. To make the instrument **larger**, you must _____ at the tuning slides, barrel or headjoint.
7. When two instruments play simultaneously and the “beats” are _____ it means the two instruments are **almost in tune**.
8. When you are **sharp**, you must make the instrument _____.
9. To make the instrument **smaller**, you must _____ at the tuning slides, barrel or headjoint.
10. Tune with your _____, not with your eyes.

11. The condition of the instrument is a factor that can cause poor intonation. _____
12. Psychological and musical phenomena are factors that can not cause poor intonation. _____
13. Pitch tendencies of instruments and performers do not affect intonation. _____
14. Poor acoustics have nothing to do with intonation. _____
15. Playing position, embouchure, and instrument placement can all aid in proper intonation production. _____
16. It is best to tune before warming-up. _____

17. Write a full paragraph (5 or more complete sentences) about your instrument and what affects tuning. Be sure to state your instrument type and what causes the problems that occur with your specific instrument when attempting to tune.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The left edge of the paper is slightly irregular, suggesting it might be from a notebook or a piece of paper torn from a binder. There is no handwriting or other markings on the page.

Point Conversion Charts

Tuning Activities

"Cents" Sharp or Flat	Points Earned
-50	10
-45	11
-40	12
-35	13
-30	14
-25	15
-20	16
-15	17
-10	18
-5	19
0	20
5	19
10	18
15	17
20	16
25	15
30	14
35	13
40	12
45	11
50	10

Point Conversion Charts

Written Assessments

Grade on Written Exam	Points Earned
100	20
95	19
90	18
85	17
80	16
75	15
70	14
65	13
60	12
55	11
50	10
45	9
40	8
35	7
30	6
25	5
20	4
15	3
10	2
5	1
0	0

Appendix H

Permission to copy pages from Garofalo Book:

>===== Original Message From garwoodw@comcast.net =====

>You have our permission to copy the pages requested for this study only. Good luck with your project.

>

>--

>Garwood Whaley

>President and Founder, Meredith Music Publications

>POB 344,

>Galesville, MD 20765

>410-867-0074 office

>410-991-4462 cell

>www.meredithmusic.com

>

>----- Original message -----

>From: rb0008 <rb0008@uncp.edu>

>

>> Good morning! I am doing my Master's thesis on an intonation study with my
>> middle school band students. I am requesting permission to photocopy pages
>> 24,26,28,30,32,34,36,38,40,42, and 52 from "Improving Intonation in Band and
Orchestra Performance." There are approximately 60 students
>> involved in the study.

>> I have enjoyed Garofalo's work and purchased several of his other titles
>> (Blueprint for Band, Guide to core Study, and Rehearsal Handbook for Band and
>> Orchestra Students).

>> Thank you for considering this request from a poor school teacher and
>> graduate student!

>> -Rebecca M. Bryant

<u>WORD BANK</u>				
Fast	Smaller	Larger	Sharp	Pull out
Intonation	Ears	Slow	Push in	Flat

1. _____ is the degree to which a pitch is accurately produced in performance, especially among the players in an ensemble.
2. _____ means incorrectly tuned **above** the correct pitch.
3. When two instruments play simultaneously and the “beats” are _____ it means the two instruments are **VERY out of tune**.
4. _____ means incorrectly tuned **below** the correct pitch.
5. When you are **flat**, you must make the instrument _____.
6. To make the instrument **larger**, you must _____ at the tuning slides, barrel or headjoint.
7. When two instruments play simultaneously and the “beats” are _____ it means the two instruments are **almost in tune**.
8. When you are **sharp**, you must make the instrument _____.
9. To make the instrument **smaller**, you must _____ at the tuning slides, barrel or headjoint.
10. Tune with your _____, not with your eyes.

11. The condition of the instrument is a factor that can cause poor intonation. _____
12. Psychological and musical phenomena are factors that can not cause poor intonation. _____
13. Pitch tendencies of instruments and performers do not affect intonation. _____
14. Poor acoustics have nothing to do with intonation. _____
15. Playing position, embouchure, and instrument placement can all aid in proper intonation production. _____
16. It is best to tune before warming-up. _____

17. Write a full paragraph (5 or more complete sentences) about your instrument and what affects tuning. Be sure to state your instrument type and what causes the problems that occur with your specific instrument when attempting to tune.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears slightly aged or off-white. There is no handwriting or other markings on the page.

Certificate of
Recognition

John Doe

is awarded this certificate in recognition of

Completing the Intonation Challenge at the CCS Summer Music Workshop

this 30th day of June

in the year 2006

Signed Rebecca M. Bryant



Appendix K1

South View Middle School
4100 Elk Rd.
Hope Mills, NC 28348

Dear

I am currently working on my Master of Arts in Music Education at The University of North Carolina at Pembroke. For my culminating project, I have created a comprehensive teaching unit in which intonation can be taught to a beginning, intermediate, or advanced middle school band class. This is a project I used with all of my band students at South View Middle School and with the participants in the Cumberland County School's Summer Music Workshop. In an attempt to provide appropriate qualitative and quantitative data, I am asking your assistance providing professional feedback about my project.

Please take time to review this project. I have included some questions for you to answer once you have familiarized yourself with the project. At this time, I am only asking for you to review the project. It is not necessary for you to implement the project in order to assist me. All of the information included in these packets is yours to keep. Please feel free to use any, all, or none of the materials I have sent to you.

You may send this information back to me via the courier, or you may e-mail your responses to me. In order to incorporate your review in my final project, I am asking that you complete this task by Monday, October 30. Thank you in advance for your help in this endeavor.

Sincerely,

Rebecca Bryant
Director of Bands
South View Middle School
rebeccabryant@ccs.k12.nc.us

Appendix K2

Please take the time to familiarize yourself with the project and respond to the following questions .

0 = not applicable 1 = never 2 = seldom 3 = sometimes 4 = often 5 = always

1. I teach intonation skills to my beginning students. _____
2. I teach intonation skills to my intermediate students. _____
3. I teach intonation skills to my advanced students. _____
4. My beginning students practice a regular tuning routine. _____
5. My intermediate students practice a regular tuning routine. _____
6. My advanced students practice a regular tuning routine. _____
7. We use the same routines to tune my students before concerts that we use in class when we tune. _____
8. My students play chorales each day. _____
9. I teach intonation as a unit of study in my classes. _____
10. I teach intonation skills little by little as I see the need in my classes. _____
11. I use singing when teaching intonation skills. _____
12. I use written assessments when teaching intonation skills. _____
13. Please briefly describe the methods you use to teach intonation. _____

Appendix K2 continued

14. Please identify the strengths of this intonation skills unit.

15. Please identify the weaknesses of this intonation skills unit.

16. Please provide additional comments.

Appendix K3

This unit takes five days to implement in your band classes. It is recommended to use five consecutive days (Monday-Friday). Following the completion of the unit, your students should be able to tune as a band each rehearsal.

Preparation before unit begins:

- Put up posters/signs with visual representations of “Sharp” and “Flat.”
- Allow for twenty minutes of each class for the next five school days to be allotted for the Intonation Skills Unit.
- Decide if you will use the included “E-flat Warm-up Chorale,” or your own chorale(s).
- Have a wind instrument available to demonstrate “liping.”

Appendix K3 continued

Day One

- The teacher introduces the intonation unit as part of the student's new daily routine.
- Warm-up.
 - Explain to your students that a proper warm-up is essential to tuning.
 - Conduct your warm-up as usual. (Add a chorale if it is not already a part of your daily routine.)
 - During your chorale(s), allow time for singing of the chorale parts as well as playing.
- Demonstration #1.
 - Ask for 2 student volunteers from any wind instrument section.
 - Without the observing students hearing you, ask student 1 to play a "Concert F," and ask student 2 to play a "Concert G."
 - Ask the observing students if the two notes were the same or different.
 - Explain that these pitches are close, but not the same.
 - Now adjust one of the instruments to be purposefully very flat.
 - Quietly ask student 1 to play a "Concert F" and ask student 2 to play a "Concert F" immediately following student 1.
 - Again ask the observing students if the two notes were the same or different.

Appendix K3 continued

- Explain to the students that volunteers each played a "Concert F," but that the two volunteers were out of tune.
- Demonstration #2.
 - Ask for student volunteers from two "like" instruments and purposefully adjust the students' instruments so that they are grossly out-of-tune.
 - Explain to the class that they will hear "beats" or "waves" when two instruments play at the same time if they are out of tune.
 - Ask the two student volunteers to play so that the observers can hear the "beats" or "waves."
 - Explain that as the pitches get closer by making the appropriate adjustments that they will hear the "beats" or "waves" slow down, and eventually stop.
 - Ask the observing students to raise their hands when they think the "beats" or "waves" have stopped.
 - Ask for the student volunteers to play a "Concert F."
 - Adjust the instrument that is flat as the students are playing the "Concert F."
 - Repeat as needed.
- Pass out the Intonation Notes Outline and ask the students to fill in the blanks as you read aloud.
- Demonstration #3
 - Prepare your wind instrument to demonstrate "lipping."

Appendix K3 continued

- Explain that it is easier to lip down than up.
- Ask for volunteers from each instrument type to demonstrate.
- Allow time for students to practice, or encourage them to practice at home.

Appendix K3 continued

Day Two

- Warm-Up.
- Ask students to take out the Notes Outline from the previous day. Review the terms and concepts learned in Day One by asking for volunteers to answer the following questions:
 - What is intonation?
 - What it sharp?
 - What is flat?
 - What does it mean when fast waves are present while two instruments are playing simultaneously?
 - What does it mean when slow waves are present while two instruments are playing simultaneously?
 - What do you do to your instrument when you are sharp?
 - What do you do to your instrument when you are flat?
 - What happens as two out of tune instrument get closer in tune?
- Pass out the "Tuning Guide" for each instrument.
- Allow time for students to skim over the information and then briefly explain how each instrument group properly adjusts their instrument.
- Provide a reference pitch for the ensemble.
- Go around the band and ask each student to play their tuning pitch. Ask the class to decide if the student is sharp or flat to the reference pitch by showing a "thumbs up" or a "thumbs down." If the student is in tune, ask the students to show a "sideways thumb."

Appendix K3 continued

- Percussionists should prepare to judge each wind player during this activity. Each wind players will receive his or her completed judge sheets for feedback.
- Allow each band student to practice adjusting his or her instrument appropriately.

Day Three

- Warm-Up.
- Ask students to take out the Notes Outline from the first day. Review the terms and concepts learned in Day One by asking for volunteers to answer the following questions:
 - What is intonation?
 - What is sharp?
 - What is flat?
 - What does it mean when fast waves are present while two instruments are playing simultaneously?
 - What does it mean when slow waves are present while two instruments are playing simultaneously?
 - What do you do to your instrument when you are sharp?
 - What do you do to your instrument when you are flat?
 - What happens as two out of tune instruments get closer in tune?
- Pass out the Intonation Factors handout.
- Ask the students to fill in their papers as you read aloud.
- Discuss which of the factors the performers can and cannot control.
- Review how each instrument group properly adjusts their instrument.
- Provide a reference pitch for the ensemble.
- Go around the band and ask each student to play their tuning pitch. Ask the class to decide if the student is sharp or flat to the reference pitch by showing a “thumbs up,” “thumbs down,” or a “sideways thumb.”

Appendix K3 continued

- Percussionists should prepare to judge each wind player during this activity. Each wind player will receive his or her completed judge sheets for feedback.
- Allow each band student to practice adjusting his or her instrument appropriately.

Day Four

- Warm-Up.
- Ask students to take out the Notes Outline from the first day. Review the terms and concepts learned in Day One by asking for volunteers to answer the following questions:
 - What is intonation?
 - What it sharp?
 - What is flat?
 - What does it mean when fast waves are present while two instruments are playing simultaneously?
 - What does it mean when slow waves are present while two instruments are playing simultaneously?
 - What do you do to your instrument when you are sharp?
 - What do you do to your instrument when you are flat?
 - What happens as two out of tune instrument get closer in tune?
- Review the Intonation Factors from Day 3.
- Review which of the factors the performers can and cannot control.
- Review how each instrument group properly adjusts their instrument.
- Pass out the Instrument Tendencies Handout. (There is a separate handout for each instrument.)
- Allow time for discussion on the key points for the key tendencies for each instrument.
- Prepare to play the warm-up chorale again.

Appendix K3 continued

- Ask the students to put “up arrows” or “down arrows” on the tendency notes present in the chorale.
 - Practice the chorale again asking students to adjust the tendency notes.
- Provide a reference pitch for the ensemble.
- Go around the band and ask each student to play their tuning pitch. Ask the class to decide if the student is sharp or flat to the reference pitch by showing a “thumbs up” or a “thumbs down.”
 - Percussionists should prepare to judge each wind player during this activity. Each wind players will receive his or her completed judge sheets for feedback.
- Allow each band student to practice adjusting his or her instrument appropriately.

Day 5

- Warm-Up.
- Ask students to take out the Notes Outline from the first day. Review the terms and concepts learned in Day One by asking for volunteers to answer the following questions:
 - What is intonation?
 - What it sharp?
 - What is flat?
 - What does it mean when fast waves are present while two instruments are playing simultaneously?
 - What does it mean when slow waves are present while two instruments are playing simultaneously?
 - What do you do to your instrument when you are sharp?
 - What do you do to your instrument when you are flat?
 - What happens as two out of tune instrument get closer in tune?
- Review the Intonation Factors from Day 3.
- Review which of the factors the performers can and cannot control.
- Review how each instrument group properly adjusts their instrument.
- Ask for volunteers from each instrument section to discuss the tendency pitches for his or her instrument.
- Prepare to play the warm-up chorale again
 - Remind the students of the arrows they put on the chorale the previous day.

Appendix K3 continued

- Practice the chorale asking students to adjust the tendency notes.
- Provide a reference pitch for the ensemble.
- Go around the band and ask each student to play their tuning pitch. Ask the class to decide if the student is sharp or flat to the reference pitch by showing a “thumbs up” or a “thumbs down.”
 - Percussionists should prepare to judge each wind player during this activity. Each wind players will receive his or her completed judge sheets for feedback.
- Allow each band student to practice adjusting his or her instrument appropriately.

Appendix K3 continued

Follow-up at after day 5

- Continue warm-up before tuning exercises.
- Continue daily tuning daily activities.
- Continue to include chorales in your daily warm-up.
- Continue to include singing in your warm-up.
- Move from an electronically provided pitch to the tuba providing the pitch.
- Eventually allow section leaders to tune to the tuba, and then provide the pitch for his or her section.

Factors that Affect Intonation:

Teacher notes to lead discussion/note-taking activity with students

1. Condition and quality of the instrument and accessories.

- Poor quality or worn out instrument
- Instrument out of adjustment
- Leaking pads, water keys, and joints
- Stuck tuning slides and valve slides
- Dents in the horn
- Corrosion inside of the horn and/or mouthpiece
- Worn out or cracked reeds
- Incorrect reed strength
- Poor quality mouthpieces

2. Basic playing procedures

- Poor posture and position
- Poor embouchure formation
- Insufficient air support
- Restricted range
- Lack of practice

3. Insufficient warm up

4. Playing off the standard tuning frequency

5. Pitch tendencies of instruments and performers

6. Poorly trained ears

7. Poor balance

8. Poor seating arrangement

9. Poor acoustics

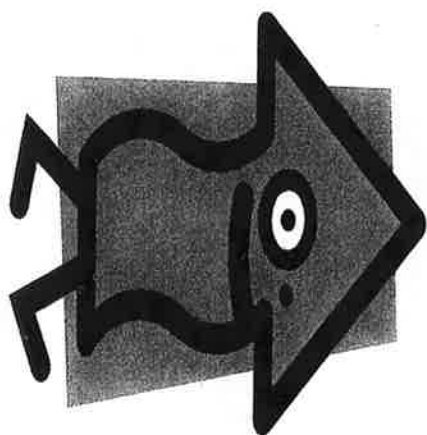
How can I improve this???

- Secure the best instrument possible
- Create a regular care and maintenance routine for your instrument.
- Have your instrument adjusted by a professional as needed
- Take private lessons
- Practice daily, and conscientiously
- Observe and listen to professional musicians
- Warm up thoroughly before tuning
- Blow warm air through horn while not playing
- Always tune to a reliable source
- Learn the pitch tendencies of your instrument
- Master the appropriate techniques for adjusting pitches while playing
- Practice!
- Responsibility of the director
- Responsibility of the director
- Responsibility of the director

Intonation Notes Outline

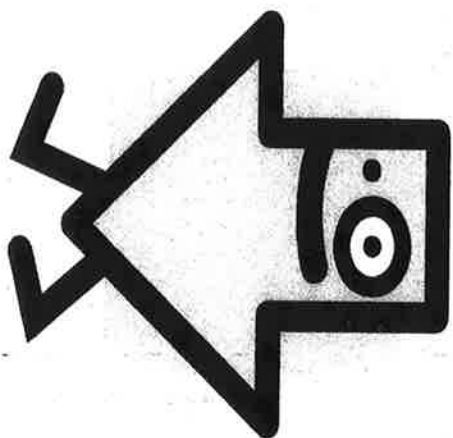
1. Intonation is: the degree to which a pitch is accurately produced in performances, especially among the players in an ensemble.
2. Sharp means: incorrectly tune above the correct pitch. (posters can be noted at this time)
3. Flat means: incorrectly tuned below the correct pitch
4. When two instruments play simultaneously and the beats are fast: it means the two instruments are very out of tune. (explain that simultaneously means at the same time)
5. When two instruments play simultaneously and the beats are slow: it means the two instruments are almost in tune.
6. When you are sharp: you must make the instrument larger
7. When you are flat: you must make the instrument small
8. To make your instrument smaller: you must push in at the tuning slides, barrel or head joint.
9. To make your instrument larger: you must pull out at the tuning slides, barrel or head joint.
10. Tune with your: ears, not your eyes. (Explain that a tuner can help us, but it should not be used as a crutch.)

SHEARP



Tuned incorrectly above the correct pitch

FILAT



Tuned incorrectly *below* the correct pitch

FLUTE

Appendix K8 continued

CHAPTER 2 • TUNING GUIDES AND INTONATION CHARTS FOR EACH INSTRUMENT

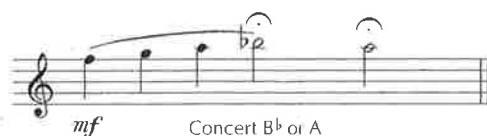
FLUTE/PICCOLO TUNING GUIDE

Procedures for Tuning the Instrument

1. Warm up thoroughly before tuning.
2. Tune at a mezzo-forte dynamic level and do not use vibrato.
3. Tune to a reliable frequency (electronic tuner, etc.) using the recommended tuning note(s) below.
4. Do not humor the tuning note; play it straight. Adjust the head joint if the pitch is sharp or flat.

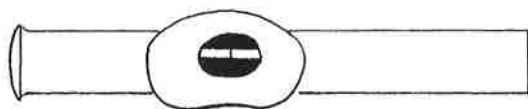
BASIC TUNING NOTE(S)

Tuning pitches are indicated with half notes; quarter note pitches are used to help "groove" the tuning note by approaching it from below.



Tuning Mechanism: Head Joint. Pull out the head joint if the pitch is sharp; push it in if the pitch is flat.

Note: The head joint has an adjustable tuning plug at the closed end. The exact location of this plug is critical for good tuning and intonation. To check the placement of the plug, carefully insert the bottom end of the cleaning rod into the open end of the head joint until it touches the stopper. The etched line on the cleaning rod should appear exactly in the center of the tone hole.

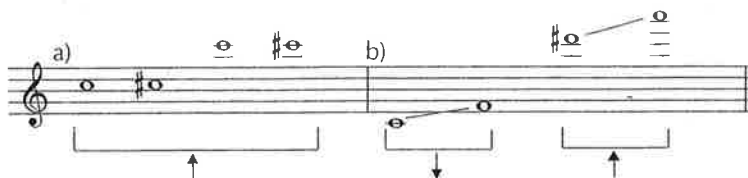


If the plug needs to be moved outward (away from the open end), tighten down on the threaded cap. To move the plug toward the open end, loosen the cap and push in. It is best to seek professional guidance when adjusting the tuning plug. Once the plug is properly adjusted, it should not be moved.

Techniques for Adjusting Pitches While Playing

1. Rolling the Tone Hole
2. Alternate Fingerings
3. Combinations of the Above

INHERENT INTONATION FLAWS*



- a) These notes are usually sharp, especially the C sharps. Roll the tone hole inward to lower the pitches.
- b) The low register tends to be flat and the high register tends to be sharp. For the low notes roll the tone hole outward to counteract the tendency to play flat. For the high notes try alternate fingerings or roll the tone hole inward.

The primary causes of poor intonation in extreme register playing on flute and piccolo are inadequate breath support, a poorly formed embouchure, and poor listening habits.

**Arrows pointing up indicate that the notes tend to be sharp; arrows pointing down indicate that the notes tend to be flat.*

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Name _____ Date _____

Carefully follow the procedures outlined in the Tuning Guide for your instrument before beginning to chart your intonation with a friend. Your teacher should provide an Intonation Charting Guidesheet with instructions on how to use an electronic tuner. Mark intonation discrepancies for lower octave scales below the staff.

Tuning Notes

Flute/Piccolo

mf

Concert B \flat or A

Check Octaves

Handwritten musical notation for Flute/Piccolo tuning notes. The staff shows a sequence of notes: a quarter note on G4, a quarter note on A4, a quarter note on B4, a half note on B \flat 4, and a half note on A4. A double bar line follows. Then, a quarter note on B \flat 4, a quarter note on A4, a quarter note on G4, and a quarter note on F \sharp 4. Handwritten annotations include *mf* under the first note, "Concert B \flat or A" under the B \flat 4 note, and "Check Octaves" under the final notes. A slur connects the B \flat 4 and A4 notes in the second measure.

[illegible]

Handwritten musical notation for the song "The Rose Tree". The notation is written on four staves, each with a treble clef and a key signature of one flat (B-flat). The melody is written on the upper staff, and the accompaniment is written on the lower three staves. The notes are written in a simple, handwritten style, with some notes beamed together. The lyrics "The Rose Tree" are written below the first staff, and "The Rose Tree" is written below the second staff. The notation is a simple, handwritten version of the song, suitable for a children's music book.

Pitch Tendencies of Dynamics

The musical notation shows a treble clef and a key signature of one flat. The notes are: G4 (mf), F4 (pp), E4 (ff), D4 (mf), C4 (pp), B3 (ff), A3 (mf), G3 (pp), F3 (ff), E3 (mf), D3 (pp), C3 (ff), B2 (mf), A2 (pp), G2 (ff), F2 (mf), E2 (pp), D2 (ff), C2 (mf), B1 (pp), A1 (ff), G1 (mf), F1 (pp), E1 (ff), D1 (mf), C1 (pp), B0 (ff), A0 (mf), G0 (pp), F0 (ff), E0 (mf), D0 (pp), C0 (ff), B-1 (mf), A-1 (pp), G-1 (ff), F-1 (mf), E-1 (pp), D-1 (ff), C-1 (mf), B-2 (pp), A-2 (ff), G-2 (mf), F-2 (pp), E-2 (ff), D-2 (mf), C-2 (pp), B-3 (ff), A-3 (mf), G-3 (pp), F-3 (ff), E-3 (mf), D-3 (pp), C-3 (ff), B-4 (mf), A-4 (pp), G-4 (ff), F-4 (mf), E-4 (pp), D-4 (ff), C-4 (mf), B-5 (pp), A-5 (ff), G-5 (mf), F-5 (pp), E-5 (ff), D-5 (mf), C-5 (pp), B-6 (ff), A-6 (mf), G-6 (pp), F-6 (ff), E-6 (mf), D-6 (pp), C-6 (ff), B-7 (mf), A-7 (pp), G-7 (ff), F-7 (mf), E-7 (pp), D-7 (ff), C-7 (mf), B-8 (pp), A-8 (ff), G-8 (mf), F-8 (pp), E-8 (ff), D-8 (mf), C-8 (pp), B-9 (ff), A-9 (mf), G-9 (pp), F-9 (ff), E-9 (mf), D-9 (pp), C-9 (ff), B-10 (mf), A-10 (pp), G-10 (ff), F-10 (mf), E-10 (pp), D-10 (ff), C-10 (mf), B-11 (pp), A-11 (ff), G-11 (mf), F-11 (pp), E-11 (ff), D-11 (mf), C-11 (pp), B-12 (ff), A-12 (mf), G-12 (pp), F-12 (ff), E-12 (mf), D-12 (pp), C-12 (ff), B-13 (mf), A-13 (pp), G-13 (ff), F-13 (mf), E-13 (pp), D-13 (ff), C-13 (mf), B-14 (pp), A-14 (ff), G-14 (mf), F-14 (pp), E-14 (ff), D-14 (mf), C-14 (pp), B-15 (ff), A-15 (mf), G-15 (pp), F-15 (ff), E-15 (mf), D-15 (pp), C-15 (ff), B-16 (mf), A-16 (pp), G-16 (ff), F-16 (mf), E-16 (pp), D-16 (ff), C-16 (mf), B-17 (pp), A-17 (ff), G-17 (mf), F-17 (pp), E-17 (ff), D-17 (mf), C-17 (pp), B-18 (ff), A-18 (mf), G-18 (pp), F-18 (ff), E-18 (mf), D-18 (pp), C-18 (ff), B-19 (mf), A-19 (pp), G-19 (ff), F-19 (mf), E-19 (pp), D-19 (ff), C-19 (mf), B-20 (pp), A-20 (ff), G-20 (mf), F-20 (pp), E-20 (ff), D-20 (mf), C-20 (pp), B-21 (ff), A-21 (mf), G-21 (pp), F-21 (ff), E-21 (mf), D-21 (pp), C-21 (ff), B-22 (mf), A-22 (pp), G-22 (ff), F-22 (mf), E-22 (pp), D-22 (ff), C-22 (mf), B-23 (pp), A-23 (ff), G-23 (mf), F-23 (pp), E-23 (ff), D-23 (mf), C-23 (pp), B-24 (ff), A-24 (mf), G-24 (pp), F-24 (ff), E-24 (mf), D-24 (pp), C-24 (ff), B-25 (mf), A-25 (pp), G-25 (ff), F-25 (mf), E-25 (pp), D-25 (ff), C-25 (mf), B-26 (pp), A-26 (ff), G-26 (mf), F-26 (pp), E-26 (ff), D-26 (mf), C-26 (pp), B-27 (ff), A-27 (mf), G-27 (pp), F-27 (ff), E-27 (mf), D-27 (pp), C-27 (ff), B-28 (mf), A-28 (pp), G-28 (ff), F-28 (mf), E-28 (pp), D-28 (ff), C-28 (mf), B-29 (pp), A-29 (ff), G-29 (mf), F-29 (pp), E-29 (ff), D-29 (mf), C-29 (pp), B-30 (ff), A-30 (mf), G-30 (pp), F-30 (ff), E-30 (mf), D-30 (pp), C-30 (ff), B-31 (mf), A-31 (pp), G-31 (ff), F-31 (mf), E-31 (pp), D-31 (ff), C-31 (mf), B-32 (pp), A-32 (ff), G-32 (mf), F-32 (pp), E-32 (ff), D-32 (mf), C-32 (pp), B-33 (ff), A-33 (mf), G-33 (pp), F-33 (ff), E-33 (mf), D-33 (pp), C-33 (ff), B-34 (mf), A-34 (pp), G-34 (ff), F-34 (mf), E-34 (pp), D-34 (ff), C-34 (mf), B-35 (pp), A-35 (ff), G-35 (mf), F-35 (pp), E-35 (ff), D-35 (mf), C-35 (pp), B-36 (ff), A-36 (mf), G-36 (pp), F-36 (ff), E-36 (mf), D-36 (pp), C-36 (ff), B-37 (mf), A-37 (pp), G-37 (ff), F-37 (mf), E-37 (pp), D-37 (ff), C-37 (mf), B-38 (pp), A-38 (ff), G-38 (mf), F-38 (pp), E-38 (ff), D-38 (mf), C-38 (pp), B-39 (ff), A-39 (mf), G-39 (pp), F-39 (ff), E-39 (mf), D-39 (pp), C-39 (ff), B-40 (mf), A-40 (pp), G-40 (ff), F-40 (mf), E-40 (pp), D-40 (ff), C-40 (mf), B-41 (pp), A-41 (ff), G-41 (mf), F-41 (pp), E-41 (ff), D-41 (mf), C-41 (pp), B-42 (ff), A-42 (mf), G-42 (pp), F-42 (ff), E-42 (mf), D-42 (pp), C-42 (ff), B-43 (mf), A-43 (pp), G-43 (ff), F-43 (mf), E-43 (pp), D-43 (ff), C-43 (mf), B-44 (pp), A-44 (ff), G-44 (mf), F-44 (pp), E-44 (ff), D-44 (mf), C-44 (pp), B-45 (ff), A-45 (mf), G-45 (pp), F-45 (ff), E-45 (mf), D-45 (pp), C-45 (ff), B-46 (mf), A-46 (pp), G-46 (ff), F-46 (mf), E-46 (pp), D-46 (ff), C-46 (mf), B-47 (pp), A-47 (ff), G-47 (mf), F-47 (pp), E-47 (ff), D-47 (mf), C-47 (pp), B-48 (ff), A-48 (mf), G-48 (pp), F-48 (ff), E-48 (mf), D-48 (pp), C-48 (ff), B-49 (mf), A-49 (pp), G-49 (ff), F-49 (mf), E-49 (pp), D-49 (ff), C-49 (mf), B-50 (pp), A-50 (ff), G-50 (mf), F-50 (pp), E-50 (ff), D-50 (mf), C-50 (pp), B-51 (ff), A-51 (mf), G-51 (pp), F-51 (ff), E-51 (mf), D-51 (pp), C-51 (ff), B-52 (mf), A-52 (pp), G-52 (ff), F-52 (mf), E-52 (pp), D-52 (ff), C-52 (mf), B-53 (pp), A-53 (ff), G-53 (mf), F-53 (pp), E-53 (ff), D-53 (mf), C-53 (pp), B-54 (ff), A-54 (mf), G-54 (pp), F-54 (ff), E-54 (mf), D-54 (pp), C-54 (ff), B-55 (mf), A-55 (pp), G-55 (ff), F-55 (mf), E-55 (pp), D-55 (ff), C-55 (mf), B-56 (pp), A-56 (ff), G-56 (mf), F-56 (pp), E-56 (ff), D-56 (mf), C-56 (pp), B-57 (ff), A-57 (mf), G-57 (pp), F-57 (ff), E-57 (mf), D-57 (pp), C-57 (ff), B-58 (mf), A-58 (pp), G-58 (ff), F-58 (mf), E-58 (pp), D-58 (ff), C-58 (mf), B-59 (pp), A-59 (ff), G-59 (mf), F-59 (pp), E-59 (ff), D-59 (mf), C-59 (pp), B-60 (ff), A-60 (mf), G-60 (pp), F-60 (ff), E-60 (mf), D-60 (pp), C-60 (ff), B-61 (mf), A-61 (pp), G-61 (ff), F-61 (mf), E-61 (pp), D-61 (ff), C-61 (mf), B-62 (pp), A-62 (ff), G-62 (mf), F-62 (pp), E-62 (ff), D-62 (mf), C-62 (pp), B-63 (ff), A-63 (mf), G-63 (pp), F-63 (ff), E-63 (mf), D-63 (pp), C-63 (ff), B-64 (mf), A-64 (pp), G-64 (ff), F-64 (mf), E-64 (pp), D-64 (ff), C-64 (mf), B-65 (pp), A-65 (ff), G-65 (mf), F-65 (pp), E-65 (ff), D-65 (mf), C-65 (pp), B-66 (ff), A-66 (mf), G-66 (pp), F-66 (ff), E-66 (mf), D-66 (pp), C-66 (ff), B-67 (mf), A-67 (pp), G-67 (ff), F-67 (mf), E-67 (pp), D-67 (ff), C-67 (mf), B-68 (pp), A-68 (ff), G-68 (mf), F-68 (pp), E-68 (ff), D-68 (mf), C-68 (pp), B-69 (ff), A-69 (mf), G-69 (pp), F-69 (ff), E-69 (mf), D-69 (pp), C-69 (ff), B-70 (mf), A-70 (pp), G-70 (ff), F-70 (mf), E-70 (pp), D-70 (ff), C-70 (mf), B-71 (pp), A-71 (ff), G-71 (mf), F-71 (pp), E-71 (ff), D-71 (mf), C-71 (pp), B-72 (ff), A-72 (mf), G-72 (pp), F-72 (ff), E-72 (mf), D-72 (pp), C-72 (ff), B-73 (mf), A-73 (pp), G-73 (ff), F-73 (mf), E-73 (pp), D-73 (ff), C-73 (mf), B-74 (pp), A-74 (ff), G-74 (mf), F-74 (pp), E-74 (ff), D-74 (mf), C-74 (pp), B-75 (ff), A-75 (mf), G-75 (pp), F-75 (ff), E-75 (mf), D-75 (pp), C-75 (ff), B-76 (mf), A-76 (pp), G-76 (ff), F-76 (mf), E-76 (pp), D-76 (ff), C-76 (mf), B-77 (pp), A-77 (ff), G-77 (mf), F-77 (pp), E-77 (ff), D-77 (mf), C-77 (pp), B-78 (ff), A-78 (mf), G-78 (pp), F-78 (ff), E-78 (mf), D-78 (pp), C-78 (ff), B-79 (mf), A-79 (pp), G-79 (ff), F-79 (mf), E-79 (pp), D-79 (ff), C-79 (mf), B-80 (pp), A-80 (ff), G-80 (mf), F-80 (

IMPROVING INTONATION IN BARD AND GEE 07

Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

Factors that Affect Intonation:

How can I improve this???

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

E-Flat Warm-Up Chorus

Heather Shaffer

Flute

Bells

Trumpet

Clarinet in E-flat

Saxophone

Saxophone

Saxophone

Trombone

1st Bassoon

2nd Bassoon

OBOE



Appendix K9 continued

TUNING GUIDES AND INTONATION CHARTS FOR EACH INSTRUMENT • CHAPTER 2

OBOE/ENGLISH HORN INTONATION CHART

Name _____ Date _____

Instrument Make and Model _____

Carefully follow the procedures outlined in the Tuning Guide for your instrument before beginning to chart your intonation with a friend. Your teacher should provide an Intonation Charting Guidesheet with instructions on how to use an electronic tuner. Mark intonation discrepancies for lower octave scales below the staff.

Tuning Notes

Oboe/English Horn

mf Concert B^b or A

OBOE

ENGLISH HORN

mf Written F or E
(Concert B^b or A)

Chromatic Scale

Major Scales

Harmonic Minor Scales

Pitch Tendencies of Dynamics

mf *pp* *ff* \angle \triangleright *pp* *ff* \angle \triangleright *pp* *ff* \angle \triangleright

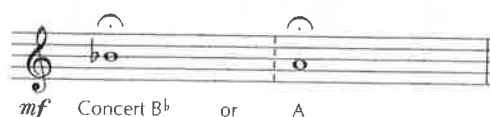
OBOE/ENGLISH HORN TUNING GUIDE

Procedures for Tuning the Instrument(s)

1. Warm up thoroughly before tuning.
2. Tune at a mezzo-forté dynamic level and do not use vibrato.
3. Tune to a reliable frequency (electronic tuner, etc.) using the recommended tuning note(s) below.
4. Do not humor the tuning note; play it straight. Adjust the reed if the pitch is sharp or flat (see below).

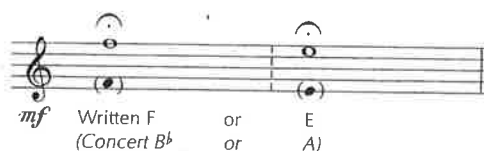
BASIC TUNING NOTE(S)

OBOE



Tuning Mechanism: None. It is not advisable to adjust the overall pitch of the instrument. Oboe tuning is primarily dependent upon good embouchure formation and a properly adjusted reed.

ENGLISH HORN

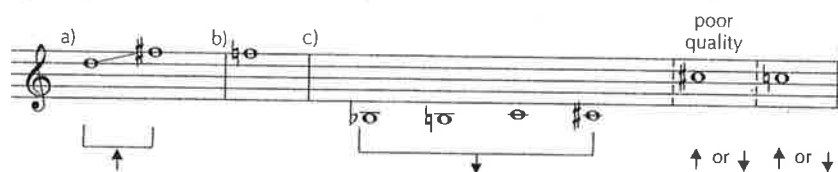


Tuning Mechanism: None. Although English horn tuning is primarily dependent upon good embouchure formation and a properly adjusted reed, it is possible to use bocals of slightly different length to raise or lower the pitch of the instrument.

Techniques for Adjusting Pitches While Playing

1. Amount of Reed in the Mouth and/or Embouchure Pressure
2. Alternate Fingerings
3. Finger Shading
4. Combinations of the Above

INHERENT INTONATION FLAWS*



- a) Add the low B key if these notes are sharp.
- b) Add the E flat key to improve the intonation and tone quality of this note.
- c) The four lowest notes on the oboe tend to be flat. The third space C sharp and C natural tend to be either sharp or flat depending on the instrument, reed, or player. Increase the amount of reed in the mouth and embouchure firmness to raise a pitch; reverse these procedures to lower a pitch.

Be sure that your instrument is properly adjusted and that you have a good quality reed.

*Arrows pointing up indicate that the notes tend to be sharp;
arrows pointing down indicate that the notes tend to be flat.

Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

Factors that Affect Intonation:

How can I improve this???

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

-
- This image shows a single page of white paper with horizontal black lines, resembling notebook paper. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slightly textured appearance and some minor discoloration or shadows, suggesting it might be a scan of a physical document. There is no handwriting or other markings on the page.

E-Flat Warm-Up Chordle

Heather Shaffer

Flute

Bells

Clarinet

Clarinet in C

Saxophone

Saxophone

Saxophone

Trumpet

Horn in F

Trombone

Bass

101

CLARINET



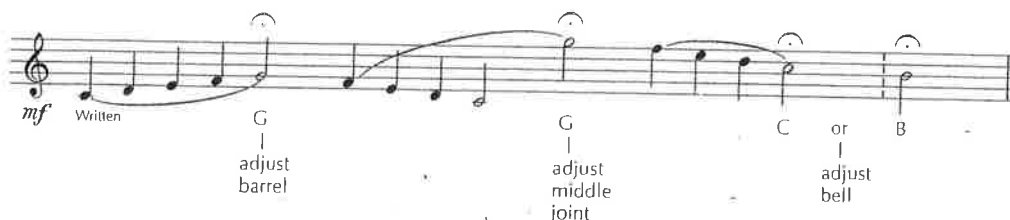
CLARINET TUNING GUIDE

Procedures for Tuning the Instrument

1. Warm up thoroughly before tuning.
2. Tune at a mezzo-forte dynamic level and do not use vibrato.
3. **Tune to a reliable frequency** (electronic tuner, etc.) **using the recommended tuning note(s) below.**
4. **Do not humor the tuning note; play it straight.** Adjust the barrel (middle joint and bell) if the pitch is sharp or flat.

BASIC TUNING NOTE(S)

Tuning pitches are indicated with half notes; quarter note pitches are used to help "groove" each tuning note by approaching it from below or above.



Tuning Mechanism: Barrel (Middle Joint, Bell). Pull out or push in the barrel (never the mouthpiece) to tune the open tone G if it is sharp or flat (the barrel is the **main** tuning mechanism). Next, adjust the middle joint to tune the G on top of the **staff**. Last, adjust the bell to tune the C or B in the **staff** if necessary.

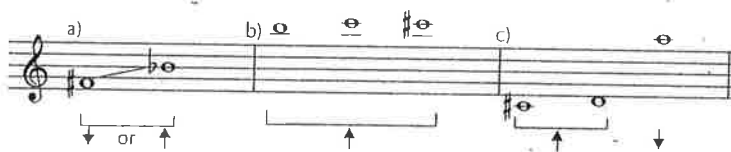
Note: If your soprano clarinet is extremely sharp and you have to pull the barrel more than 1 1/2 mm, use tuning rings to fill in the gap, otherwise poor intonation will result.

The concert tuning pitches for B flat soprano, bass and contrabass clarinets are F and B flat or A; the concert tuning pitches for E flat soprano, alto and contraalto clarinets are B flat and E flat or D.

Techniques for Adjusting Pitches While Playing

1. Alternate Fingerings
2. Finger Shading
3. Embouchure Adjustment-Lipping
4. Combinations of the Above

INHERENT INTONATION FLAWS*



- a) The throat tones may be sharp or flat depending on the instrument, mouthpiece, reed, and/or player. Use finger shading or alternate fingerings to correct faulty intonation.
- b) For B natural, lower the second finger of the left hand over the second tone hole until the note is in tune. For C natural, lower the first finger of the left hand over the first tone hole.
- c) These notes (and possibly others) may be out of tune on your instrument. If so, experiment with finger shading and alternate fingerings. Remember that the clarinet is the least flexible of all wind instruments as regards pitch adjustment by lipping.

Good clarinet intonation and tone quality are largely dependent upon correct embouchure formation, sufficient air support, and a good quality mouthpiece and reed.

**Arrows pointing up indicate that the notes tend to be sharp;
arrows pointing down indicate that the notes tend to be flat.*

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CLARINET INTONATION CHART

Name _____ Date _____

Instrument Make and Model _____

Mouthpiece and Reed Used _____

Carefully follow the procedures outlined in the Tuning Guide for your instrument before beginning to chart your intonation with a friend. Your teacher should provide an Intonation Charting Guidesheet with instructions on how to use an electronic tuner. Mark intonation discrepancies for lower octave scales below the staff.

Tuning Notes



Chromatic Scale

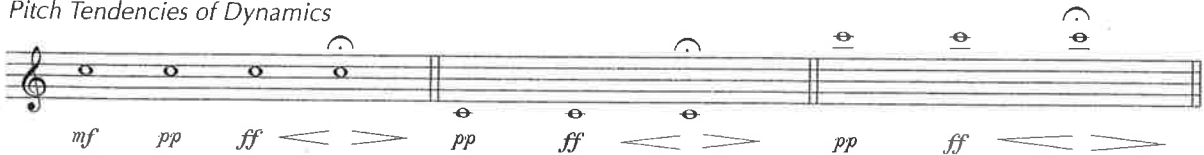


Major Scales

Harmonic Minor Scales



Pitch Tendencies of Dynamics



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Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

Factors that Affect Intonation:

How can I improve this???

1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

E-Flat Warm-Up Chorale

Appendix K 10 continued

Heather Shaffer

Flute

Horn/Bells

Clarinet

Bass Clarinet/Baritone I.C.

Alto Sax

Tenor Sax

Baritone Sax

Trumpet

Trombone in F

Euphonium/Baritone

Tuba

BASSOON

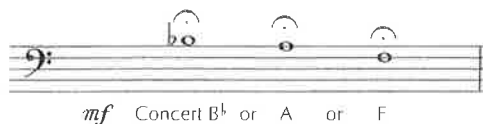


BASSOON/CONTRABASSOON TUNING GUIDE

Procedures for Tuning the Instrument(s)

1. Warm up thoroughly before tuning.
2. Tune at a mezzo-forte dynamic level and do not use vibrato.
3. Tune to a reliable frequency (electronic tuner, etc.) using the recommended tuning note(s) below.
4. Do not humor the tuning note; play it straight. Adjust the reed if the pitch is sharp or flat (see below).

BASIC TUNING NOTE(S)



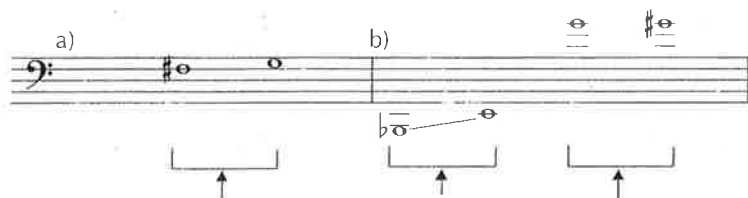
Tuning Mechanism: None.

Note: It is not advisable to adjust the overall pitch of the bassoon by moving the bocal in or out of the instrument because the vent hole must be positioned so that the pad covers it. Although bassoon tuning is primarily dependent upon good embouchure formation and a properly adjusted reed, it is possible to use bocals of slightly different length to raise or lower the pitch of the instrument. The higher the bocal number, the lower the pitch.

Techniques for Adjusting Pitches While Playing

1. Alternate Fingerings
2. Amount of Reed in the Mouth
3. Embouchure Adjustment-Lipping
4. Finger Shading (Rare)
5. Combinations of the Above

INHERENT INTONATION FLAWS*



- a) Fourth space G is probably the most out of tune note on the bassoon. Use the supplementary key for this note if available (except in fast passages). Be sure to set the adjustment screw so that the tone is in tune.
- b) The low register notes and some high register notes tend to be sharp. Lip the low notes in tune by decreasing the amount of reed in the mouth and embouchure firmness. For the high notes, try alternate fingerings.

Because the bassoon uses an old key system, almost every instrument is different as regards inherent intonation flaws. The bassoon has an extraordinarily large number of alternate fingerings available to correct faulty intonation. (Be sure that your instrument is properly adjusted and that you have a good quality reed.)

**Arrows pointing up indicate that the notes tend to be sharp; arrows pointing down indicate that the notes tend to be flat.*

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Appendix K 11 continued

TUNING GUIDES AND INTONATION CHARTS FOR EACH INSTRUMENT • CHAPTER 2

BASSOON/CONTRABASSOON INTONATION CHART

Name _____ Date _____

Instrument Make and Model _____

Carefully follow the procedures outlined in the Tuning Guide for your instrument before beginning to chart your intonation with a friend. Your teacher should provide an Intonation Charting Guidesheet with instructions on how to use an electronic tuner. Mark intonation discrepancies for lower octave scales below the staff.

Tuning Notes

Bassoon

mf Concert B^b or A or F

Chromatic Scale

Major Scales

Harmonic Minor Scales

Pitch Tendencies of Dynamics

mf *pp* *ff* \lt \gt *pp* *ff* \lt \gt *pp* *ff* \lt \gt

Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

Factors that Affect Intonation:

How can I improve this???

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

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- This image shows a single page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears slightly aged or off-white. There is no handwriting or other markings on the page.

E-Flat Warm-Up Choral

Heather Shaffer

Flute

Oboe/Bells

Clarinet

Clarinet in C

Alto Sax

Tenor Sax

Baritone Sax

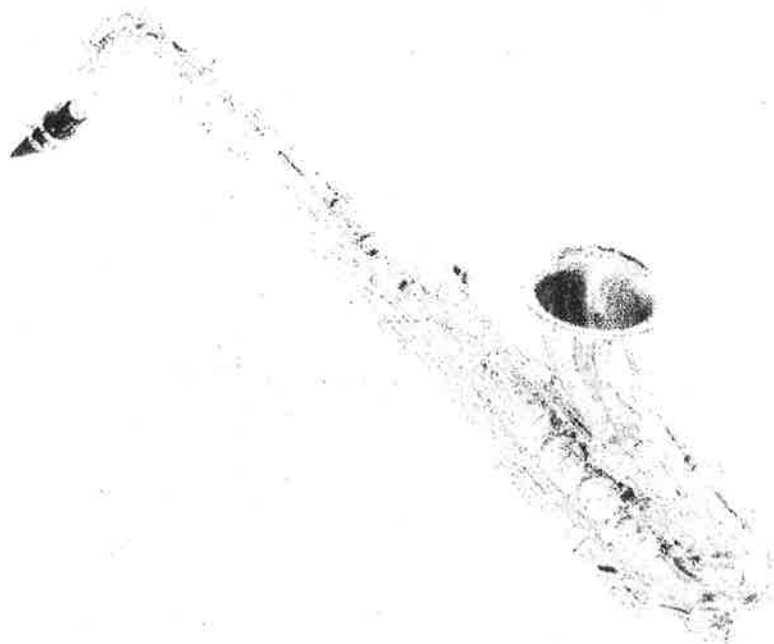
Trumpet

Trombone in F

Trombone/Euphonium

Tuba

SAXOPHONE



SAXOPHONE TUNING GUIDE

Procedures for Tuning the Instrument

1. Warm up thoroughly before tuning.
2. Tune at a mezzo-forte dynamic level and do not use vibrato.
3. Tune to a reliable frequency (electronic tuner, etc.) using the recommended tuning note(s) below.
4. Do not humor the tuning note; play it straight. Adjust the mouthpiece if the pitch is sharp or flat.

BASIC TUNING NOTE(S)

Tuning pitches are indicated with half notes; quarter note pitches are used to help "groove" the tuning note by approaching it from below.



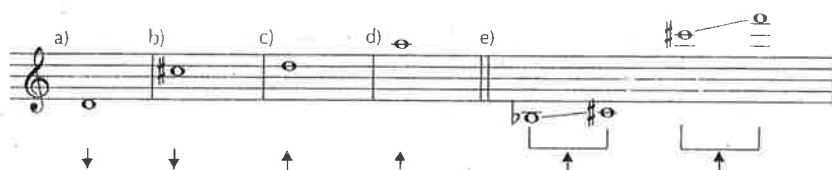
Tuning Mechanism: Mouthpiece. Pull out the mouthpiece on the cork of the neck if the pitch is sharp; push it in if the pitch is flat. After the mouthpiece has been properly adjusted, mark the cork with a pen for future reference.

The concert tuning pitches for alto and baritone saxophones are B flat or A; the concert tuning pitches for soprano and tenor saxophone are F or E.

Techniques for Adjusting Pitches While Playing

1. Embouchure Adjustment-Lipping
2. Alternate Fingerings
3. Combinations of the Above

INHERENT INTONATION FLAWS*



- a) If the low D is flat, add the low C sharp key.
- b) If this C sharp is flat, add the bottom side keys B flat and C.
- c) If this D is sharp, add the low B key.
- d) If this A is sharp, add the F sharp key.
- e) Saxophones tend to be sharp in the low and extreme high register. Lip these notes in tune by relaxing the embouchure and pulling back the lower jaw.

**Arrows pointing up indicate that the notes tend to be sharp; arrows pointing down indicate that the notes tend to be flat.*

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SAXOPHONE INTONATION CHART

Name _____ Date _____

Instrument Make and Model _____

Mouthpiece and Reed Used _____

Carefully follow the procedures outlined in the Tuning Guide for your instrument before beginning to chart your intonation with a friend. Your teacher should provide an Intonation Charting Guidesheet with instructions on how to use an electronic tuner. Mark intonation discrepancies for lower octave scales below the staff.

Tuning Notes

Saxophone *mf* Written G or F# Check Octaves

Chromatic Scale

Major Scales

Harmonic Minor Scales

Pitch Tendencies of Dynamics

mf *pp* *ff* \angle \triangleright *pp* *ff* \angle \triangleright *pp* *ff* \angle \triangleright

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Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

Factors that Affect Intonation:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

How can I improve this???

E-Flat Warm-Up Chorale

Heather Shaffer

Flute

Xboe/Bells

Clarinet

ss Clarinet/ritone T.C.

Alto Sax

Tenor Sax

Bari Sax

Trumpet

Horn in F

Euphone/ritone

Tuba

TRUMPET



B \flat TRUMPET/CORNET AND EUPHONIUM (TREBLE CLEF) TUNING GUIDE

Procedures for Tuning the Instrument(s)

1. Warm up thoroughly before tuning.
2. Tune at a mezzo-forte dynamic level and do not use vibrato.
3. Tune to a reliable frequency (electronic tuner, etc.) using the recommended tuning note below.
4. Do not humor the tuning note; play it straight. Adjust the main tuning slide if the pitch is sharp or flat.

BASIC TUNING NOTE

The tuning pitch is indicated with a half note; quarter note pitches are used to help "groove" the tuning note by approaching it from below.



Tuning Mechanism: Main Tuning Slide. Pull out the main slide to lower the overall pitch of the instrument; push it in to raise the pitch.

TUNING THE VALVES

Each of the valves on your instrument has a separate tuning slide which must be adjusted in relationship to the main tubing after it has been tuned. Neglecting to tune the valves will adversely affect the overall intonation of your instrument. Follow these procedures:

1. Tune the first valve exactly one whole step below the opening tuning note as follows:

Do not humor the pitch played with the valve. If it is flat, push in the slide. If it is sharp, pull out the slide. These procedures should be followed when tuning the other valves (see below).

2. Next, tune the second valve exactly one half step below the open tuning note as follows:

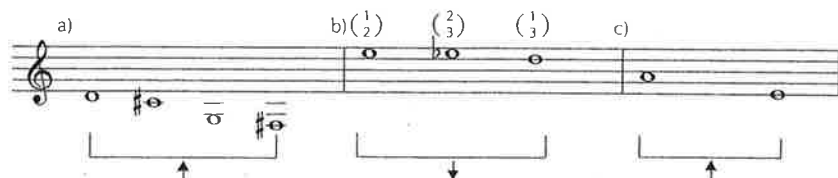
3. Last, tune the third valve exactly one and a half steps below the open tuning note as follows:



Techniques for Adjusting Pitches While Playing

1. Alternate Fingerings
2. Third Valve Slide Ring
3. First Valve Slide Thumb Trigger
4. Embouchure Adjustment-Lipping (increasing or decreasing lip pressure)
5. Combinations of the Above

INHERENT INTONATION FLAWS*



- a) Use the third valve slide ring, fourth valve, or other means to lower these notes.
- b) If the fifth harmonic notes are flat, try alternate fingerings as indicated or lip up.
- c) If these notes are slightly sharp, use the first valve slide trigger, the third valve by itself, or lip down.

* Arrows pointing up indicate that the notes tend to be sharp; arrows pointing down indicate that the notes tend to be flat.

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Appendix K 13 continued

B♭ TRUMPET/CORNET AND EUPHONIUM (TREBLE CLEF) INTONATION CHART

Name _____ Date _____

Instrument Make and Model _____

Mouthpiece Used _____

Carefully follow the procedures outlined in the Tuning Guide for your instrument before beginning to chart your intonation with a friend. Your teacher should provide an Intonation Charting Guidesheet with instructions on how to use an electronic tuner. Mark intonation discrepancies for lower octave scales below the staff.

Tuning Notes

Trp/Euph (T.C.) *mf* Written C (Concert B♭) Check Open Tones

Chromatic Scale

Major Scales

Harmonic Minor Scales

Pitch Tendencies of Dynamics and Mutes

Cup:

Open:

Straight:

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Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

Factors that Affect Intonation:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

How can I improve this???

E-Flat Warm-Up Chorale

Heather Shaffer

Appendix K 13 continued

Flute

Oboe/Bells

Clarinet

Bass Clarinet
Baritone I, C

Alto Sax

Tenor Sax

Bari Sax

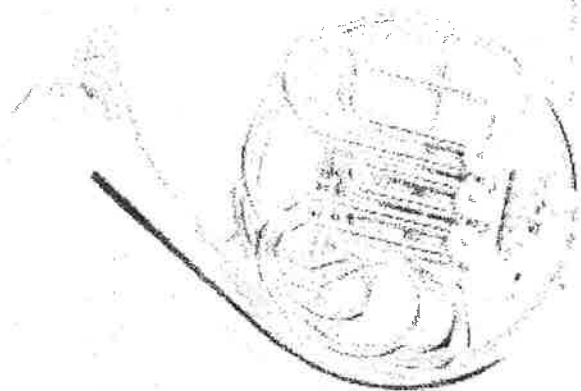
Trumpet

Horn in F

Trombone/
Baritone

Tuba

FRENCH HORN



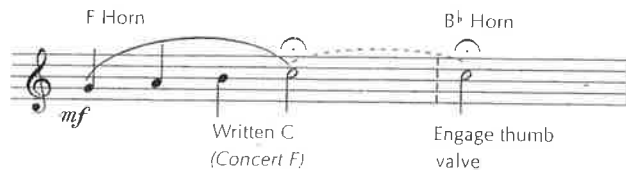
HORN TUNING GUIDE

Procedures for Tuning the Instrument

1. Warm up thoroughly before tuning.
2. Tune at a mezzo-forte dynamic level and do not use vibrato.
3. Tune to a reliable frequency (electronic tuner, etc.) using the recommended tuning note(s) below.
4. Do not humor the tuning note; play it straight. Adjust the main tuning slides if the pitch is sharp or flat.

BASIC TUNING NOTES

The tuning pitches are indicated with half notes; quarter note pitches are used to help "groove" the tuning note by approaching it from below.



Tuning Mechanism: Main Tuning Slide(s). Tune the F horn first, then tune the B flat horn using the same written note (simply engage the thumb valve). The pitches should match each other. Push in or pull out the appropriate tuning slide to raise or lower the pitch.

Note: Be sure that you know which main tuning slide to adjust for each side of the double horn. Horns vary from one manufacturer to another. Consult the owner's manual or ask your teacher for help. See below for guidance in tuning the six valves in relationship to the open horns.

TUNING THE VALVES

Each of the valves on your instrument has a separate tuning slide which must be adjusted in relationship to the main tubing after it has been tuned. Neglecting to tune the valves will adversely affect the overall intonation of your instrument. Follow these procedures:

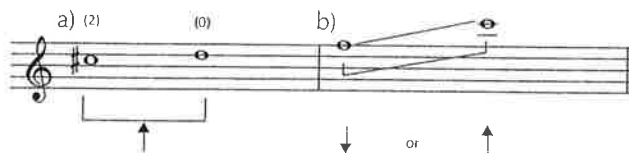
1. Tune the first valve exactly one whole step below the opening tuning note as follows:
Do not humor the pitch played with the valve. If it is flat, push in the slide. If it is sharp, pull out the slide. These procedures should be followed when tuning the other valves (see below).
2. Next, tune the second valve exactly one half step below the open tuning note as follows:
3. Last, tune the third valve exactly one and a half steps below the open tuning note as follows:
Tune the valves on the F horn first, then tune the valves on the B flat horn.



Techniques for Adjusting Pitches While Playing

1. Alternate Fingerings
2. Use of the Right Hand in the Bell
3. Embouchure Adjustment—Lipping (increasing or decreasing lip pressure)
4. Combinations of the Above

INHERENT INTONATION FLAWS*



- a) If these notes are sharp when played with the regular fingerings on the B flat horn, try the alternate fingerings indicated which are available on the F horn. Other alternate fingerings are possible.
- b) To correct faulty intonation in the high register, use alternate fingerings, adjust the hand in the bell, and/or lip the notes in tune.

* Arrows pointing up indicate that the notes tend to be sharp; arrows pointing down indicate that the notes tend to be flat.

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HORN INTONATION CHART

Name _____ Date _____

Instrument Make and Model _____

Mouthpiece Used _____

Carefully follow the procedures outlined in the Tuning Guide for your instrument before beginning to chart your intonation with a friend. Your teacher should provide an Intonation Charting Guidesheet with instructions on how to use an electronic tuner. Mark intonation discrepancies for lower octave scales below the staff.

Tuning Notes

F Horn B \flat Horn

Check Open Tone

Horn *mf* Written C (Concert F) Engage thumb valve

Chromatic Scale

Major Scales *Harmonic Minor Scales*

Pitch Tendencies of Dynamics and Muting

mf pp ff < > *pp ff* < > *pp ff* < >

Open:

Mute:

Hand Stop:

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Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

Factors that Affect Intonation:

How can I improve this???

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

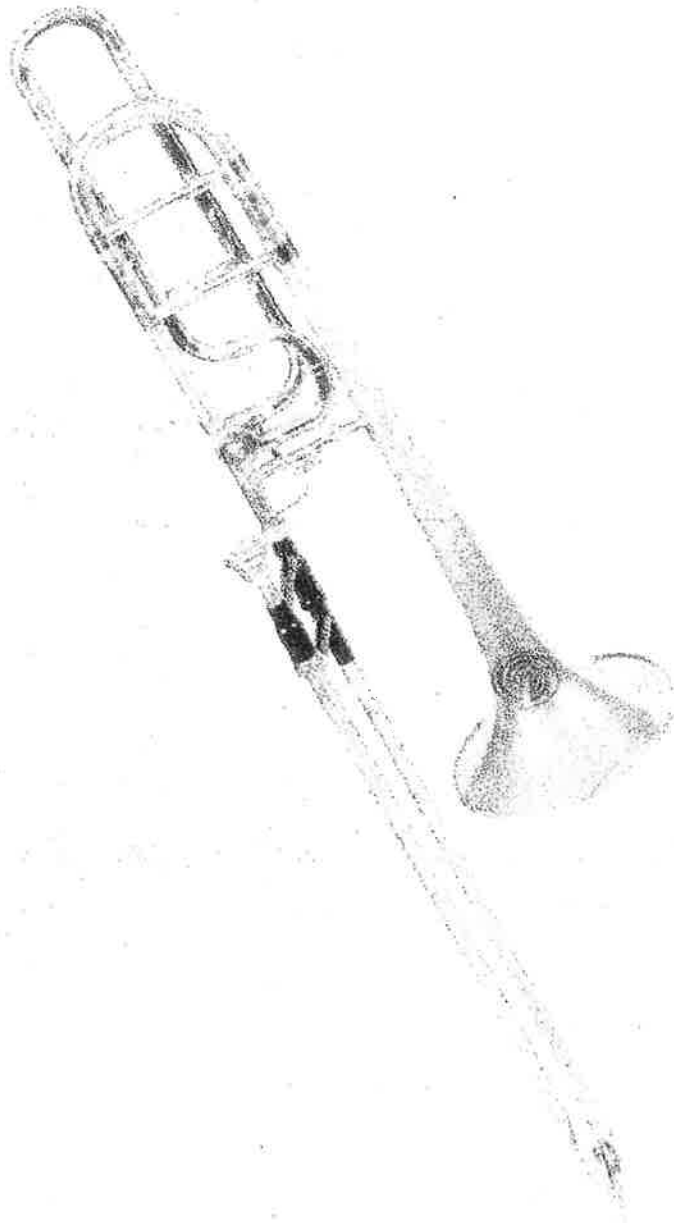
9. _____

E-Flat Warm-Up Chorus

Heather Shaffer

The musical score is arranged in 12 staves, each representing a different instrument. The instruments are listed on the left side of the page: Flute, Oboe/Bells, Clarinet, Clarinet in C, Alto Sax, Tenor Sax, Baritone Sax, Trumpet, Trombone, Euphonium, and Tuba. The score is written in 4/4 time and features a warm-up chorus. The music is composed of various melodic lines and rests, with some instruments having more active parts than others. The notation includes notes, rests, and dynamic markings. The score is written in a standard musical notation style, with a key signature of one flat (B-flat) and a time signature of 4/4.

TROMBONE



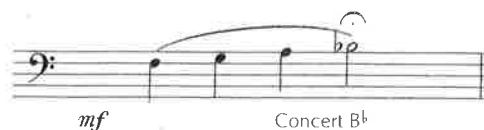
TROMBONE TUNING GUIDE

Procedures for Tuning the Instrument

1. Warm up thoroughly before tuning.
2. Tune at a mezzo-forte dynamic level and do not use vibrato.
3. Tune to a reliable frequency (electronic tuner, etc.) using the recommended tuning note below.
4. Do not humor the tuning note; play it straight. Adjust the main tuning slide if the pitch is sharp or flat.

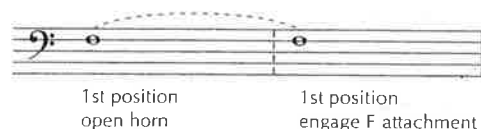
BASIC TUNING NOTE

The tuning pitch is indicated with a half note; quarter note pitches are used to help "groove" the tuning note by approaching it from below.



Tuning Mechanism: Tuning Slide. Pull out the main slide to lower the overall pitch of the instrument; push it in to raise the pitch.

To tune the F attachment on a trombone so equipped, play fourth line F in first position on the open horn, then engage the F attachment and match the pitch. If the pitch played with the F attachment is sharp or flat, pull out or push in the F attachment tuning slide.

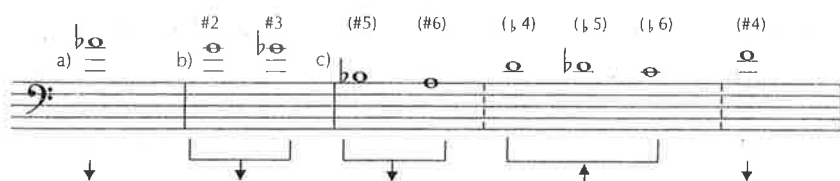


Note: The F attachment when engaged lengthens the overall tubing of the instrument a perfect fourth, thus extending the low range downward as well as providing additional alternate slide positions.

Techniques for Adjusting Pitches While Playing

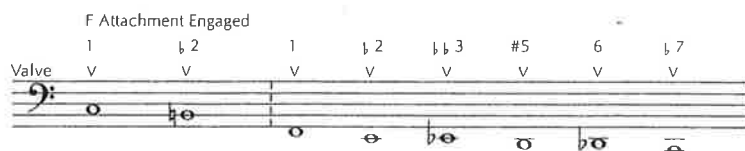
1. Slide Adjustment
2. Alternate Slide Positions
3. Lipping (Rare)

INHERENT INTONATION FLAWS*



- a) This note should not be played in first position because it is extremely flat; use third position.
- b) These notes are normally played in sharp second and sharp third positions respectively. Don't be afraid to adjust the slide inward to play the notes in tune.
- c) Most alternate slide positions have to be slightly adjusted inward or outward for good intonation.

Trombones equipped with an F attachment can play the following notes with the valve engaged:



* Arrows pointing up indicate that the notes tend to be sharp; arrows pointing down indicate that the notes tend to be flat.

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TROMBONE INTONATION CHART

Name _____ Date _____

Instrument Make and Model _____

Mouthpiece Used _____

Carefully follow the procedures outlined in the Tuning Guide for your instrument before beginning to chart your intonation with a friend. Your teacher should provide an Intonation Charting Guidesheet with instructions on how to use an electronic tuner. Mark intonation discrepancies for lower octave scales below the staff.

Tuning Notes

Trombone

mf Concert B \flat * Tune F Attachment Check Open Tones

Chromatic Scale

Use F Attachment (b)

Major Scales

Harmonic Minor Scales

Pitch Tendencies of Dynamics and Mutes

mf *pp* *ff* *pp* *ff* *pp* *ff*

Open:

Straight:

Cup:

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Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

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E-Flat Warm-Up Chorale

Heather Shaffer

Flute

Euphonium/Bells

Clarinet

Alto Sax

Tenor Sax

Bass Sax

Trumpet

Trombone

Bassoon

Double Bass

13

EUPHONIUM



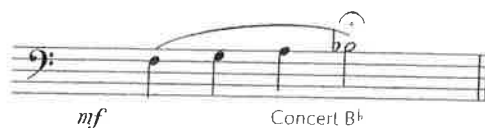
EUPHONIUM TUNING GUIDE

Procedures for Tuning the Instrument

1. Warm up thoroughly before tuning.
2. Tune at a mezzo-forte dynamic level and do not use vibrato.
3. Tune to a reliable frequency (electronic tuner, etc.) using the recommended tuning note below.
4. Do not humor the tuning note; play it straight. Adjust the main tuning slide if the pitch is sharp or flat.

BASIC TUNING NOTE

The tuning pitch is indicated with a half note; quarter note pitches are used to help "groove" the tuning note by approaching it from below.



Tuning Mechanism: Main Tuning Slide. Pull out the main slide to lower the overall pitch of the instrument; push it in to raise the pitch.

To tune the fourth valve or compensating valve on euphoniums so equipped, play the third harmonic note F on the open horn, then engage the fourth valve and match the pitch. If the pitch played with the fourth valve is sharp or flat, pull out or push in the fourth valve slide.



Note: The fourth valve when engaged lengthens the overall tubing of the euphonium a perfect fourth, thus extending the low range downward as well as providing additional alternate fingerings for better intonation.

TUNING THE VALVES

Each of the valves on your instrument has a separate tuning slide which **must be** adjusted in relationship to the main tubing after it has been tuned. Neglecting to tune the valves will adversely affect the overall intonation of your instrument. Follow these procedures:

1. Tune the first valve exactly one whole step below the opening tuning note as follows:

Do not humor the pitch played with the valve. If it is flat, push in the slide. If it is sharp, pull out the slide. These procedures should be followed when tuning the other valves (see below).

2. Next, tune the second valve exactly one half step below the open tuning note as follows:

3. Last, tune the third valve exactly one and a half steps below the open tuning note as follows:

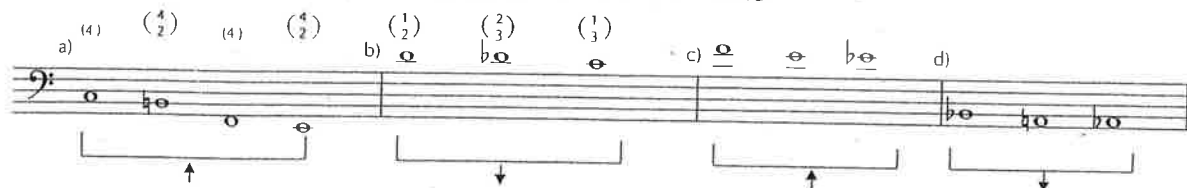
On instruments not equipped with a fourth valve it may be necessary to tune the third valve slightly flat to help lower notes played with valves 1-3 and 1-2-3.



Techniques for Adjusting Pitches While Playing

1. Alternate Fingerings (includes use of the compensating valve if available)
2. Embouchure Adjustment-Lipping (increasing or decreasing lip tension)
3. Combinations of the Above

INHERENT INTONATION FLAWS*



- a) Use alternate fingerings if your instrument is equipped with a fourth valve, otherwise lip down.
- b) If the fifth harmonic notes are flat, try alternate fingerings or lip up.
- c) If the sixth harmonic notes are sharp, lip down.
- d) If the low B flat (also A and A flat) is flat when compared to the upper octave, lip up.

* Arrows pointing up indicate that the notes tend to be sharp; arrows pointing down indicate that the notes tend to be flat.

EUPHONIUM INTONATION CHART

Name _____ Date _____

Instrument Make and Model _____

Mouthpiece Used _____

Carefully follow the procedures outlined in the Tuning Guide for your instrument before beginning to chart your intonation with a friend. Your teacher should provide an Intonation Charting Guidesheet with instructions on how to use an electronic tuner. Mark intonation discrepancies for lower octave scales below the staff.

Tuning Notes

Euphonium

mf Concert B \flat * Tune 4th Valve Check Open Tones

Chromatic Scale

Use 4th Valve

Major Scales

Harmonic Minor Scales

Pitch Tendencies of Dynamics

mf *pp* *ff* *pp* *ff* *pp* *ff*

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Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

Factors that Affect Intonation:

How can I improve this???

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

-
- This image shows a single page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears slightly aged or off-white. There is no handwriting or other markings on the page.

E-Flat Warm-Up Chorale

Heather Shaffer

Flute

Boe/Bells

Clarinet

Bass Clarinet/Euphonium T.C.

Alto Sax

Tenor Sax

Baritone Sax

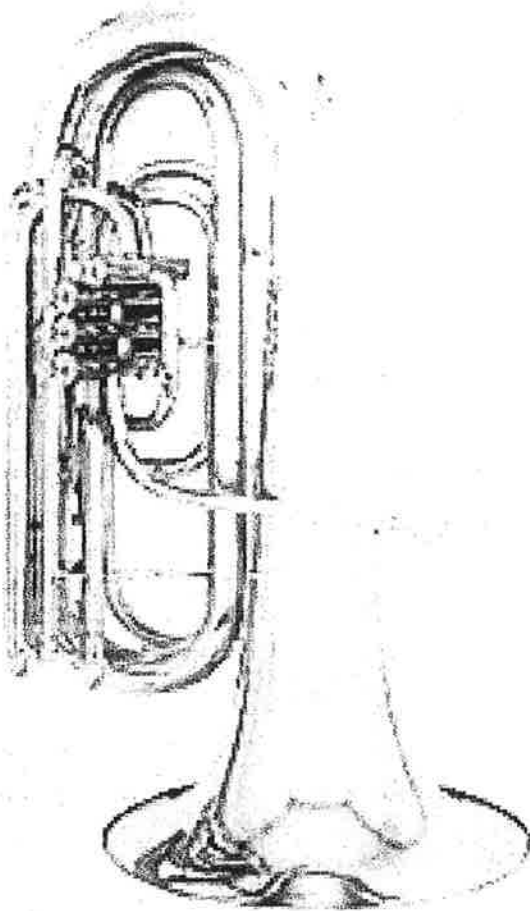
Trumpet

Trombone in F

Euphonium/Trombone

Tuba

TUBA



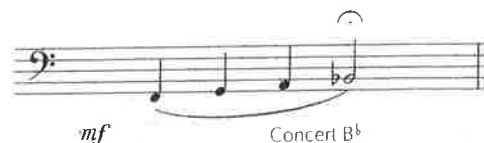
B \flat TUBA TUNING GUIDE

Procedures for Tuning the Instrument

1. Warm up thoroughly before tuning.
2. Tune at a mezzo-forte dynamic level and do not use vibrato.
3. Tune to a reliable frequency (electronic tuner, etc.) using the recommended tuning note below.
4. Do not humor the tuning note; play it straight. Adjust the main tuning if the pitch is sharp or flat.

BASIC TUNING NOTE

The tuning pitch is indicated with a half note; quarter note pitches are used to help "groove" the tuning note by approaching it from below.



Tuning Mechanism: Main Tuning Slide. Pull out the main slide to lower the overall pitch of the instrument; push it in to raise the pitch.

To tune the fourth valve on tubas so equipped, play the third harmonic note F on the open horn, then engage the fourth valve and match the pitch. If the pitch played with the fourth valve is sharp or flat, pull out or push in the fourth valve slide.



Note: The fourth valve when engaged lengthens the overall tubing of the tuba a perfect fourth, thus extending the low range downward as well as providing additional alternate fingerings for better intonation.

TUNING THE VALVES

Each of the valves on your instrument has a separate tuning slide which must be adjusted in relationship to the main tubing after it has been tuned. Neglecting to tune the valves will adversely affect the overall intonation of your instrument. Follow these procedures:

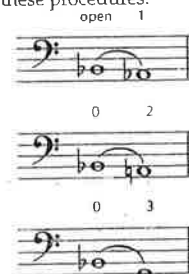
1. Tune the first valve exactly one whole step below the opening tuning note as follows:

Do not humor the pitch played with the valve. If it is flat, push in the slide. If it is sharp, pull out the slide. These procedures should be followed when tuning the other valves (see below).

2. Next, tune the second valve exactly one half step below the open tuning note as follows:

3. Last, tune the third valve exactly one and a half steps below the open tuning note as follows:

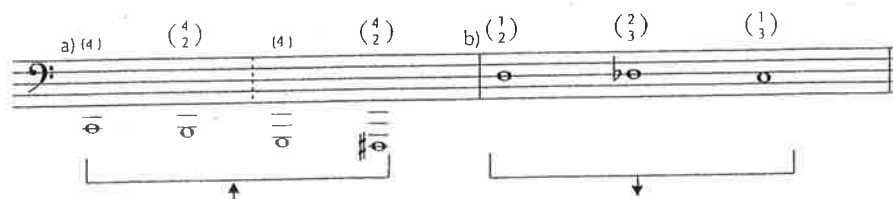
On instruments not equipped with a fourth-valve it may be necessary to tune the third valve slightly flat to help lower notes played with valves 1-3 and 1-2-3.



Techniques for Adjusting Pitches While Playing

1. Alternate Fingerings
2. Adjusting the Main Tuning Slide (if convenient to do so while playing)
3. Embouchure Adjustment—Lipping (increasing or decreasing lip pressure)
4. Combinations of the Above

INHERENT INTONATION FLAWS*



- a) Use alternate fingerings as marked if your instrument is equipped with a fourth valve, otherwise lip down or temporarily pull out the main tuning slide.
- b) If the fifth harmonic notes are flat, try alternate fingerings or lip up.

* Arrows pointing up indicate that the notes tend to be sharp; arrows pointing down indicate that the notes tend to be flat.

B♭ TUBA INTONATION CHART

Name _____ Date _____

Instrument Make and Model _____

Mouthpiece Used _____

Carefully follow the procedures outlined in the Tuning Guide for your instrument before beginning to chart your intonation with a friend. Your teacher should provide an Intonation Charting Guidesheet with instructions on how to use an electronic tuner. Mark intonation discrepancies for lower octave scales below the staff.

Tuning Notes

Tuba

mf Concert B♭ * Tune 4th Valve Check Open Tones

Chromatic Scale

Use 4th Valve

Major Scales

Harmonic Minor Scales

Pitch Tendencies of Dynamics

mf pp ff < > *pp ff* < > *pp ff* < >

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Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

Factors that Affect Intonation:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

How can I improve this???

E-Flat Warm-Up Chorale

Heather Shaffer

Flute

Oboe/Bells

Clarinet

Bass Clarinet/Baritone T.C.

Alto Sax

Tenor Sax

Bari Sax

Trumpet

Horn in F

Euphonium/Baritone

Tuba

14

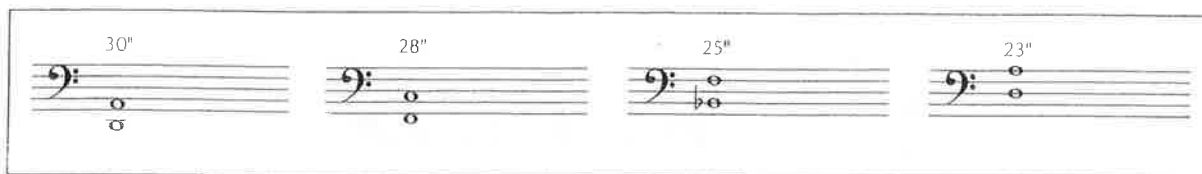
PERCUSSION



TIMPANI TUNING GUIDE

Procedures for Tuning the Instrument






A basic set of timpani consists of two drums that measure 28 and 25 inches in diameter. A complete set of timpani consists of four drums whose combined playing range covers an octave and a half.



Tuning Mechanism: Foot Pedal. To raise the pitch of a timpani depress the foot pedal or turn the adjustment screws clockwise; to lower a pitch reverse these procedures.

Note: The initial tuning of a new timpani head should be done by your teacher or an experienced percussionist. If the head is not properly adjusted, it cannot be accurately tuned.

Tuning: Before you can learn to accurately tune the timpani, you must be able to identify and sing all intervals that occur within an octave both ascending and descending. An effective way to learn to hear intervals is to associate them with notes of familiar songs. For example:

<p>INTERVAL: Major Second TUNE: <i>Alouette</i></p> 	<p>INTERVAL: Major Third TUNE: <i>Marine's Hymn</i></p> 	<p>INTERVAL: Perfect Fourth TUNE: <i>Here Comes The Bride</i></p> 
<p>INTERVAL: Perfect Fifth TUNE: <i>Twinkle, Twinkle Little Star</i></p> 	<p>INTERVAL: Major Sixth TUNE: <i>My Bonnie Lies Over the Ocean</i></p> 	

Once the ability to identify and sing intervals has been mastered, you should be capable of tuning the timpani using the following system:

1. Release the head tension on all drums to be tuned.
2. Sing the lowest pitch to be tuned.
3. Gently strike the drum with the mallet.
4. Slowly increase the tension on the head by pushing down on the pedal until the desired pitch is reached.
5. Using this note as the root, sing the interval to the next drum and repeat procedures in #3 and #4.

In ensemble performance it is often necessary to change the pitch of one or more drums during rest measures. This change is accomplished by softly singing the interval between the existing pitch and the pitch to be tuned, and by slowly adjusting the tension on the head after gently striking the drum with the mallet.

When learning to tune the timpani, use a pitch pipe or A-440 tuning fork (you should purchase one or the other). Work at memorizing A-440 by repeatedly listening to and singing the pitch.

Intonation Facts

- The only definite pitch percussion instrument that is tuned by the performer is timpani.
- All percussionists should learn to adjust the tension on the timpani to produce the correct pitches and best tone quality. ✱

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Basic Tuning Reminders

- Warm-up before tuning.
- The room must be quiet to tune.
- Do not use vibrato when tuning.
- Tune at a mezzo-forte dynamic level.
- Tune to a reliable frequency (strobotuner, etc.).
- Tune with your ears, not your eyes.
- Weak air = flat pitches.
- Embouchure that is too tight = sharp.
- Embouchure that is too loose = flat.

Factors that Affect Intonation:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

How can I improve this???

E-Flat Warm-Up Chorale

Heather Shaffer

Flute

Oboe/Bells

Clarinet

Bass Clarinet/
Baritone I.C.

Alto Sax

153
Tenor Sax

Bari Sax

Trumpet

Trom in F

Hornbone/
Baritone

Tuba

Percussion Judges

Instrument: _____

Name: _____

Please rate the performer on the following criteria
5 = Superior 4 =Excellent 3=Good 2 =Below Average 1 =Poor

Posture:	5	4	3	2	1
Effort:	5	4	3	2	1
Tone:	5	4	3	2	1
Intonation:	5	4	3	2	1

Instrument: _____

Name: _____

Please rate the performer on the following criteria
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