

## The Application of Vocal Technique in Achieving Optimum Tone Quality in Woodwind and Brass Players

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**Hypothesis:** *A woodwind or brass player uses his/her instrument as an extension of the human vocal tract in order to produce tones, which are pleasant for both the listener and the player. **Therefore,** teaching these instrumentalists how to utilize excellent singing posture, diaphragmatic-costal breathing and, in particular, vocal resonating techniques as associated with particular vowel formations, should improve the overall tone quality of the instrumentalist by adding appropriate formants to the tone produced.*

For several years we have studied the effects of the application of appropriate vocal posture, diaphragmatic-costal breathing, and vocal tract resonance on the development of flute tone quality and the production of a variety of timbres and dynamic colors in undergraduate flute students with very positive results. In 2003, we widened the study to include all woodwind and brass players. Our research process includes educating undergraduate woodwind and brass players in understanding the anatomical structure of the human body; particularly the vocal tract with its various shapes and sizes as a variety of tongue and lip vowels are produced. The application of the diaphragmatic-costal breathing method in opening and relaxing the vocal tract as well as providing appropriate breath support so that optimal resonance can be attained is also an important component of this education process. Students are also taught correct posture, and shown how to utilize particular vowel shapes in order to add additional resonance factors to the tone produced on the instrument. **Our research demonstrates that a more resonant tone quality as well as a wider variety of timbres and dynamic colors can be produced when these vocal technical components are added to the process of producing tone on most woodwind or brass instruments.** The double reed instrument players do not seem to be able to utilize the techniques as easily.

With the help of a Research Grant from the Center for Educational Practice at Saint Xavier University, we have been able to document, using the Sony MiniDV Camcorder and an 822 ONEPOINT Stereo DAT microphone, the immediate results of the application on high quality digital film. With the aid of an Apple PowerBook, we have produced a PowerPoint presentation; including video clips of representative students in their first session, and in subsequent sessions, which demonstrates the process, as well as the differences in their vocal and instrumental tone production.

Digital tapes from 47 individual sessions at Boston College are currently being analyzed, using VoceVista software, and creating a spectrum analysis of the sounds, in order to graph the resonance factors for the instrumental tone quality produced by research participants so that quantitative proof of the hypothesis exists. The results of our research to this point have been presented for the National Association of Teachers of Singing, the Illinois Music Educators Association, the Chicago Chapter of the National Flute Association, the Milwaukee Flute Association. Members of the Boston College Bands program, through the courtesy of David Healey, Director of Bands, participated in a full week workshop.

Dr. Bickel and Professor Morris are available for workshops at the high school and college level in order to share with your instrumental colleagues and students, the process of applying vocal technique to achieve optimum tone quality in woodwind and brass players. Please contact us at the above e-mail addresses or phone numbers for further information.