COMPARATIVE ANALYSIS OF TRUMPET EMBOUCHURE METHODS

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INTRODUCTION

“Effortless trumpet playing is the result of effective, reliable performance habits and a clear, musical vision. Young players deemed ‘naturals’ are students who simply formed a set of reliable habits at an early age” (Bhasin, 2006, p. 69). It has always been an endeavor for this author as an educator and as a performer to understand the intricacies of trumpet performance. As a beginner, this author was blessed with a great private teacher that smoked unfiltered Camel cigarettes while in the lesson, in a room with no windows! As the author got older, he changed teachers. Unfortunately, the pedagogical ability of those teachers was less than desirable. Specifically, certain elements such as range development and musical style were not properly addressed and subsequently, poor habits developed in this author’s ability.

Unfortunately, the author was not aware of the importance of finding the best teacher, just the most available. One teacher was a recent college graduate who was attempting to change his embouchure, which resulted in his desire to practice being reduced to ten to fifteen minutes per day! The lack of pedagogical knowledge made the author question everything about putting the horn to his face and destroyed his self-confidence. It took years for the author to overcome the damage that his deficient teacher caused. Years later, the author saw that former teacher at a conference and the teacher openly admitted that he didn’t know what he was doing while teaching the author and knew that he caused great problems for his playing. Fortunately, the author stumbled upon one of the best pedagogical teachers he ever had, who corrected many of the bad habits he had developed from years of poor instruction. It was then that the author realized that the desire to be a virtuosic musician, to constantly hone one’s craft, or to achieve greatness is not enough. There needs to be an understanding of the mechanics of how to play one’s instrument; moreover, how to develop one’s skill alone in a practice room.
As music educators, it is incumbent that the students entrusted to them have the best available knowledge in order to teach specific skills. After all, not everyone is a “natural” player. Often times it is those “natural” players that rarely know how they can perform the way that they do (Bhasin, 2006). This study is designed to explore a very specific and integral skill about playing the trumpet: The embouchure.

Instrumental music teachers understand that teaching beginning brass embouchures presents a variety of challenges. Children who are beginning to form the embouchure are still developing the musculature required to do so. Subsequently, they compensate by using more muscles than needed and that habit is often not replaced with the correct techniques. This leads to an inefficient use of the musculature surrounding the trumpet embouchure. Matthias Bertsch (2001) demonstrated the physiological differences using infrared technology that showed how an inefficient embouchure looks, when compared to an efficient embouchure. It is that inefficiency that causes many beginning or intermediate band students to plateau in their ability before they really develop their embouchure properly. Many teachers have been taught ineffective methods on how to instruct beginning band students, stressing working more musculature than necessary (McLaughlin, 2013). Additionally, there is a lack of effective embouchure instructions within the current beginning band methods. These two major concerns have hindered brass students and have inhibited their degree of success on their chosen instrument. Those students potentially could forego band in their later years because they believe that their ability is not good enough to continue, when in fact, it is only inefficient and causing them problems. Thus, students are working much harder in order to achieve success in honing and working their musicianship (McLaughlin, 2011).
There are a few basic skills that every trumpet player must possess. Some of these skills are: “free, unimpeded air support in all registers; a strong, flexible embouchure; and coordination between tongue level and airflow” (Bhasin, 2006, p. 69). The purpose of this paper was to provide a resource for fellow trumpet pedagogues and teachers that will empower their students with the proper information and embouchure diagnosis, so that those students do not face the same deficiencies that were caused from this author’s experience with poor pedagogical instruction. As Bhasin (2006) states, students should, “develop a consistent, reliable set of performance habits at an early age” so that they will not be hindered by the lack of their embouchure skills, thus setting the stage for their continued growth as a trumpet player (p. 69). Details of trumpet embouchure were investigated, such as embouchure formation, types of embouchures, air to embouchure balance, tongue arch, compression, mouthpiece placement, use of syllables, lip aperture, use of pedal tones, breath, and the concept of resting as much as one plays. These aspects were examined by researching different trumpet method texts and comparing the pedagogical approaches unique to each one of the different embouchure types. Each text was chosen because the method book’s author endorsed, used or developed their own approach that they found to be most efficient in trumpet playing.
REVIEW OF LITERATURE

Certain themes developed through an exploration of the literature on the topic of embouchure development and use. First, it was necessary to conduct a chronological examination of embouchure development in band method texts. Band method texts have shown how embouchure methods have developed differently over time. Band directors and instructors generally use the most current literature for their teaching, as everyone wants to have the most current information available. However, this author wanted to examine the band method books for potential trends that might have developed. It was also necessary to develop a working definition of what the trumpet embouchure actually is, in order to effectively compare the different embouchure types according to one definition. Finally, examining those individuals who seemed to have success using different embouchure types, such as relaxed embouchure, buzzing, pressure, non-pressure and the use of tongue-arch. These embouchure types were then compared through examining methodological texts and conclusions and teaching strategies were developed.

**Band Method Pedagogical Trends**

Detailed information about brass pedagogy is lacking in modern band method literature. Hullet (2006) continues, “brass pedagogues disagree about how to teach the mechanics of embouchure formation and development” (p. 8). This lack of information available is evident through an examination of band methods. Hulett (2006) states, “research studies on brass pedagogy are scarce in the literature” (p. 5). Wright (2009) further postulates, “most pedagogical theories are based on an incomplete understanding of the specific interaction that take place between the lungs, the lips and the horn,” (p. 33). Hunt (2000) makes an observation, “the ‘mass’ of early band literature, which includes most group instruction books, does not allow beginning
brass players sufficient time for embouchure development and range and endurance development” (p.5). Hunt expands on this point by saying, “the beginning trumpeter is all-too-often left to her own devices- the only instruction being to “smile and blow,” (p. 5). The trend within current band method literature about pedagogical embouchure development is that it is vague and does not effectively address the development of the embouchure. Specifically, Texter (1975) examined 66 band method books and found that only 11 made any reference to embouchure development. Hulett (2006) examined 11 method books published after 1975 and found that eight included some pedagogical instruction in embouchure formation. This chronological examination of methods suggests an increasing trend in pedagogical band method literature, showing an emphasis on embouchure development without specific details to the techniques involved with forming and maintaining the embouchure.

Figure 1

Robinson’s (1934) Rubank Elementary Method only made one reference to embouchure formation; specifically, “the student must not get in the habit of ‘forcing’ or using extreme pressure in playing the higher notes” (p. 3). Weber’s (1962) First Division Band Method says,
“Tighten lips a little to get higher tones and loosen to get lower tones” (p. 8). In Band: The Individualized Instructor, by Froseth (1970), it states, “To produce a tone, take a normal breath and blow easily and evenly. Maintain proper posture and do not force or overblow” (p. 2). Some method books gave little or no explanation, such as Felstein’s (1973) Alfred’s New Band Method that stated, “Your teacher will show you . . . how to produce a tone” (p. 2). Another book lacking in explanation was Feldstein and O’Reilly’s (1977) second method, Alfred’s Basic Band Method, which includes only two pictures of a performer without any note or pedagogical explanation. Feldstein & O’Reilly’s (1988) later publication, Yamaha Band Student, did not include any embouchure pedagogical information. Elledge and Haddad’s (1992) Step-by-Step includes no photographs or embouchure pedagogical instruction at all, which suggests that the instructor or teacher should be able to provide competent instruction.

There are many methods (Dvorak & Froseth, 2006; Froseth, 1997; Lautzenheiser et al., O’Reilly & Williams, 1997; 1999; Pearson, 1982; Pearson, 1993; Ployhar, 1977; Rhodes, Bierschenk, & Lautzenheiser, 1991) that specifically introduce the embouchure using the ‘m’ approach, or closed-embouchure approach. Specifically, students are to form their lips as if saying the letter ‘m,’ then asked to blow through them to create a sound (Hulett, 2006). Band method texts refer to techniques without fully explaining the techniques and without taking into account the age and musculature of beginners over the course of the methods. Subsequently, it has been noted that there has been very little difference within the standard methodology over the past few decades. As summarized in Figure One, early trends indicated little detailed information, instead referring to instructor explanation.

Later, the trend became more unified, as many books recommended using the ‘m’ approach or the closed-embouchure approach. Barrow (2010) suggested that in the late 19th
century into the 20th century, the embouchure was frequently defined using the words “stretch” or “smile” (p. 62). Barrow (2010) continues that the early method texts of O.A. Peterson in 1924 and John Victor in the 1930’s also used the same references and it wasn’t until later that the trend changed. Irons (1938) wrote, “I recommend placing the mouthpiece firmly to the lips with mouth in a natural position. Do not stretch the part of the lips that are inside the mouthpiece” (p. 15)

This trend away from the “smile” or a “tension” approach has evolved through the current method books until today. Subsequently, there is a need for further examination about the different types of embouchures within modern trumpet pedagogy in order to provide a greater resource for modern educators who might not be as proficient in brass pedagogy as the current band method books suggest.

**Embouchure Definition**

Before progressing, it should be noted what is the actual definition of an embouchure. Of the 23 facial muscles, three-the orbicularis oris (a heavy sphincter muscle that surrounds the mouth), the mentalis (a v-shaped muscle in the chin), and the buccinators (a muscle in the cheek with four fibrous bands flowing forward into the lip muscle) form the trumpet embouchure (Banschbach, 2009).

![Muscles of the face (2014)](image)
When forming the brass embouchures, the mentalis is used to push the lower lip up against the upper lip. Additionally, the upper lip does not push downward, as there is no musculature that works to do that in a brass embouchure. The orbicularis oris is used to contract or relax on the airstream as it makes contact with the mouthpiece, which is where the vibration is setup. Finally, the buccinator muscles hold the cheeks against the teeth, keeping air out of the cheeks (Banschbach, 2009). For the purpose of this paper, the embouchure will be defined as the total formation of the tongue, lips and horn angle as the instrument is prepared for playing. The aperture begins with the preparation of the vibrational channel of the lips and how the body is prepared beforehand.

Beginners naturally default to adding pressure to the embouchure with the mouthpiece in order to achieve a higher pitch. This pressure then begins to restrict the blood flow to the muscles in the embouchure, which hinders vibration and chokes off the sound. By continually adding pressure to the embouchure to achieve temporary results, the fibers of the orbicularis oris will require rest, ice and warm compresses (Banschbach, 2009). Strieder (2013) makes an interesting observation about the stressors to trumpet playing, stating that, “teaching students to overcome these stressors (range, dynamics, endurance, articulation, technique, rehearsals and auditions) is a challenge because every student is unique” (p. 47).

Different texts explain embouchure in different ways because the actual definition can have multiple elements within the definition. For example, according to Carmine Caruso (2002), “The whole embouchure consists of five definite movements: 1.) Putting the mouthpiece in contact with the lips; 2.) Putting tension on the lips for the note to be played; 3.) Positioning the jaw properly; 4.) Angling the instrument properly; 5.) The blow” (p. 7).

Another definition of a proper embouchure comes from Arban (1982):
The mouthpiece should be placed in the middle of the lips, two-thirds on the lower lip, and one-third on the upper lip. At any rate, this is the position which I have adopted, and which I believe to be the best. (p. 7)

Yet another pedagogue, Claude Gordon (1968), states:

There is always much discussion as to the placement of the mouthpiece on the lips, and different players have played successfully with different positions. However, for freer vibration and more endurance in all registers and for more power and control, the mouthpiece should be placed more on the upper lip. This gives the advantage of more lip in the mouthpiece or more vibrating surface. The lower the mouthpiece is placed, the more it tends to shut off the vibration…(p. 5)

Callet and Civiletti (2002) describe the embouchure as follows:

When forming a correct tongue-lip position, you can build super endurance with musical flexibility of a clarinet or violin. Your tongue should curl over so that the top of the tongue presses against the top, inside of your lower lip. The tongue will thicken and widen, all across the mouth, as you play higher. To further strengthen the tongue, bring the top lip down on top of the tongue. To descend, simply relax the tongue very gradually. (p. 10)

Civiletti (2005) clarified his embouchure, known as the TCE, or Tongue - Controlled Embouchure:

Place the downward pointing tongue tip one the top, inside of the bottom lip. Arch the tongue so the top surface of the tongue touches the cutting edge of the top teeth and the bottom inside of the top lip. …Do not squeeze the lips together or pull them in tightly against the teeth. Do not push the top lip upward with the bottom lip as if to form a sneer.
Avoid tightening the mouth corners as in a smile. Relax the shoulders, arms and neck.

Keep the teeth wide open so the full width of the tongue can remain between the teeth.

Maintain a think and fleshy feel in the lips in all registers. (p. 1)

Callet (2007) revised his thinking to this:

With teeth wide open, place the tip of your tongue lightly against the back of your lower teeth. Then, curl your tongue over fully so it is between your upper and lower teeth and up against your lips. Draw your bottom lip in against the wedge of your tongue in order to hold the tongue firmly in its full curl. Feel the cutting edges of BOTH your upper and lower teeth against the TOP side of your tongue! (p. 1)

Macbeth (1985) defined the embouchure, according to Louis Maggio, as follows:

A fast and sure way of checking the proper position of the lip is as follows: 1. Whistle. 2. Retain the forward position of the lips. 3. With the index finger, push the center of the bottom lip up and behind the top lip so as to close the opening. 4. Place mouthpiece under nose. 5. Move down to 2/3 upper and 1/3 lower. 6. Keep the chin up. 7. Aim the bell of the horn slightly down. 8. Pump air. 9. Buzz down towards the cleft in the chin. (p. 5)

**Embouchure Types**

Embouchure description has been a subject of popularity with trumpeters. Starting in the late 19th century, embouchure explanations frequently use the words, “stretch” or “smile” to describe lip positioning. For example, Saint-Jacome (2002) instructs players to “place the lips together in a smiling position” (p. 3). According to Gardner (1990), “identifying the physical characteristics of expert performance and attempting directly to apply those characteristics to the playing process of less-skilled players has been a dominant pedagogical focus” (p. 30). Hence, it is of great importance to understand how to best instruct beginners on techniques that will
provide them with the basics of embouchure development. Johnson (2010) states two important factors with embouchure development: “the first principle involves the muscles required to control the vibrating portion of the embouchure...The second principle involves the vibrating portion itself” (p. 34-35).

The vibration, or buzz, of the embouchure has been touted as an integral pedagogical tool over the past few decades. Rafael Mendez, James Stamp, Max Schlossberg, Ronald Romm; and Fred Elias stressed buzzing on the mouthpiece (Pugh, 2003). Eric Wright (2009) noted that, “very few works in the performance literature require buzzing the mouthpiece as a musical application” (p. 31). However, Wright (2009) added that the pedagogy of James Stamp was geared towards the “development of independent control of the facial muscles as an antidote to the excessive use of mouthpiece pressure” (p. 31). Specifically, James Stamp (1978) speaks of setting up the buzz via the following:

Playing the mouthpiece alone, hold it in the left hand with thumb and forefinger. Keep the fingers loose and do not clench them. Hold the mouthpiece an inch from the small end. This is to lessen the pressure on the lips. What pressure is needed is added after the breath. This applies also when playing the instrument. This has proven to be a most important point in my teaching. (p. 3)

James Zigara (2006) states that, “the energized airstream is focused and directed by the muscles that surround the lip aperture, causing the lips to buzz inside the mouthpiece. The instrument amplifies the sound and the note is executed” (p. 56). Given that, the embouchure will remain relaxed enough to produce a sound while remaining efficient.

Fred Elias (1925) touted the ‘Non-pressure system,’ which he figured out through working with Herbert Clarke. Elias heard about Clarke, “taking his cornet, tying it on a string
and striking high C” (p. 2). This is the impetus with which he began his development using the buzzing method. Elias (1925) wrote:

The first thing the pupil must do is to produce a buzz on the mouthpiece. This is done with vibration of the lips. Take the mouthpiece in the left hand, let it rest on your thumb and against your lips. Let your lips in a natural position, never stretch lips across teeth. Place mouthpiece on lips where it feels most natural, near the center as much as possible. You will have to experiment with this buzz until the knack is learned.

Remember the finer the buzz the better the tone. Pronounce the syllable Hoo. Do not use tongue. (p. 3)

In keeping with the non-pressure idea, William Adam (1975) spoke of buzzing the lips and mouthpiece, but cautioned against having tension in the lips and the buzz. It is this tension that needs to be treated with great caution and foresight. As the embouchure develops, muscles become stronger and the educator must understand how to approach this physical strength and continue to direct the student towards an embouchure that is not tense.

Hickman (2006) explains that other embouchure pedagogies stress mouthpiece pressure, “as a viable method for note changing, but at great expense to the trumpeter's tone quality and lip health” (p. 113). Too much pressure is counter-productive to endurance and sustaining a functioning embouchure. Hunt (2002) postulates, “too much mouthpiece pressure on the lips, via mashing the lips between the mouthpiece and the teeth, is the brass players nemesis. The teeth and lips can’t tolerate the pressure, and the high mouthpiece pressure “shuts off” the tiny vibrations which make the high register possible” (p. 6). Many beginning brass players use the pinky ring located on the lead pipe as an aid to ‘pull’ the trumpet towards their mouthpiece in an attempt to squeeze out notes that they cannot reach using correct techniques, instead ‘mashing’
the embouchure. Bhasin (2007) elaborates, “the muscles of the arms and hands tighten as players ascend, and the added pressure creates a slightly more secure feeling and lip firmness, which unfortunately does not last long before the lips succumb to swelling and pain” (p. 68). Banschbach (2009) details this point, as the “restriction of fibrous blood flow,” (p. 18) from adding too much pressure, which can lead to atrophy, a condition where the muscle fibers in the embouchure lose volume. However, frequently taking the mouthpiece away from the mouth permits new blood flow (p. 18-19). This technique contradicts what Arban (1982) states:

In order to produce the higher notes, it is necessary to press the instrument against the lips, so as to produce an amount of tension proportionate to the needs of the note to be produced; the lips being thus stretched, the vibrations are shorter, and the sounds are consequently of a higher nature. (p. 7)

The use of pressure will need to be overcome with proper playing techniques in order to develop a lifelong ability to play the trumpet. Bhasin (2007) summarizes:

Without pressure, the other playing habits or airflow, aperture control, and tongue position will have to coordinate to produce higher tones. Over time, a more efficient habit set will emerge (even under stress in performance) especially if music is used as the primary source of practice material during habit shifting sessions. (p. 68).

Relaxed Embouchure

Elias (1927) stated, “do not use any pressure on the lips. The blood must circulate through the lips at all times” (p. 5). Hunt clarified the meaning of ‘no-pressure’ by stating that the player:

Must learn to substitute a tightly compressed m-m-m-m embouchure and highly pressurized airstream, to replace mouthpiece pressure which is exerted upon the ‘chops’
for the purpose of ‘stretching’ or ‘thinning’ the lips, in order to produce ever smaller
(higher) vibrations. The only mouthpiece pressure required is that which is sufficient to
prevent air leaking from around the mouthpiece, while playing. (p. 11)

Johnson (2010) explained that, “for lower pitches, the aperture is wider creating a bigger space in
the lips and therefore a higher flow-rate. For higher pitches, the aperture is smaller creating a
lower flow-rate” (p. 28).

Shuebruk (1923) realized how the relaxed embouchure worked:

Interval practice trains the lips to slacken and tighten, (to make the opening between the
lips larger or smaller) for low or high tones. A low tone is made by loosening the lips a
little, and the high tones are not obtained by blowing harder but by pinching the lips
tighter together. The difference of high and low in the scale is of course assisted by a
relaxing and tensing of the body generally, but the lips make the whole difference in pitch
(p. 23).

Ultimately, according to Barth (2013), “An efficient embouchure has several characteristics,
perhaps the most obvious being that it is capable of functioning with little muscular effort” (p.
30). In order to achieve the higher registers with brass instruments, the embouchure needs to
operate with as little tension as possible. McLaughlin (2013) states that too much tension “tires
the embouchure, hinders the lips and makes it hard for them to vibrate which prevents resonance
and harms range” (p. 4). Barth (2013) states, “an efficient embouchure will vibrate freely and
easily in response to a player's breath, allowing for clear attacks, clean articulation, and a vibrant,
colorful sound” (p. 30).

So, in order to play the higher pitches on the trumpet, something else is required. Since
added mouthpiece pressure is counter-productive to lip vibration and the stretching of the
embouchure musculature limits higher lip vibrations, the velocity of the air must be increased. As Jerome Callet (2007) states in, *Master Superchops*, “trumpet players have been taught to increase range by tightening the lips, (and) blowing more air” (p. 2). As children are taught to use their lips in order to develop their initial sound, their technique results in a thinner sound, with less resonance (Callet, 2007). To counter this resonance issue, the lip needs to remain supple, allowing it to vibrate freely. In order to increase pitch, the tongue position arches to increase the air speed before it approaches the aperture tunnel.

**Tongue-arch**

Through videofluorographic equipment, researchers viewed the tongue and oral cavity shape of professional trumpeters, such as Maurice Andre. The results demonstrated that the “various shapes of the oral cavity are vital to pitch selection and the changing of registers” (Winick, 1983, p. 25). Aside from genetics, the easiest method for changing the shape of the oral cavity inside the mouth is with the use of the tongue-arch. As Claude Gordon noted in his commentary in Arban (1983), “for years it was the opinion that the lips produced the higher notes… It is now known that this is not true- the tongue controls the pitch changes” (p. 7). Bhasin (2007) describes the correlation between air speed and tongue position, “while playing, the tongue position determines the speed and path of the air by adjusting the shape of the oral cavity. The shape of the space inside your mouth (oral cavity) must be appropriate to the register you are playing in” (p. 65). Less pressure coupled with tongue position will aid in manipulating the pitch changes necessary in a relaxed and controlled embouchure. Callet and Civiletti (2002) note that:

> The higher you play, the thicker and wider the tongue becomes. You should feel your top lip curling inward, cross the entire width of your mouth, on top of the tongue. …your
stronger and more pliable tongue can be placed between both lips. Your lips will curl inward against the tongue to ascend. To descend you will slightly relax the lip’s grip of your tongue.

…Your lips should always remain thick and vibrant as your tongue acts as a buffer between the lips and the front of your teeth. The lips and tongue in this forward position can easily control the air into pure sound in every range. I call this the tongue-lip isometric. This very simple secret is the most powerful method that can be used in all brass playing. (p. 13-15)

Continuing, Callet and Civiletti (2002) state that, “learning how to keep your lips from losing their ability to vibrate, with ease in the upper register, will give you additional flexibility in your playing once you develop this technique.“ (p. 13). Callet (2007) also explains that, “the control of air is moved away from the unstable lips to the stable tongue, a much more powerful and controllable muscle” (p. 2). Callet’s (2007) over-emphasis on the use of the tongue in the embouchure is a shift from current pedagogies. He speculates that his observations are a rediscovered technique that was “taught during the baroque era and rediscovered by the select few truly great players of our time” (p. 2). When using the tongue arch, the lip functions in the manner as Claude Gordon (1968) suggests, “when ascending to the higher register the lips should contract toward the mouthpiece. When descending to lower notes, the lips should relax.” (p. 5) Walter Smith (1935), a renowned trumpet pedagogue, states the following in Lip Flexibility on the Cornet or Trumpet: Forty-One Studies for Embouchure Development:

The following…studies are designed solely to develop the action of the lips and the back of the tongue until the utmost flexibility and control of these members is attained.
…The sole object is to build a movement of the lips and tongue…The back of the tongue should rise slightly toward the roof of the mouth with each successive step upward, as though pronouncing the letter E, and the lower lip should be at the same time drawn upward and into the mouthpiece very slightly, while the wind force is also increased to make up for the narrowed opening between the lips. These muscles should of course be relaxed again in descending. (p. 3)

The movement towards the mouthpiece can be described as a pucker shape because the embouchure moves forward towards the mouthpiece when forming the embouchure. As defined by Sanborn (1997):

The puckered embouchure is the opposite of a smile. Pucker is not a completely accurate term, as the lips are not pouted forward as if to receive a kiss. They are still rolled inwards, as when saying the letter ‘M’. The entire embouchure area contracts forward towards the rim of the mouthpiece, as if to grip it. The mouth corners tighten down firmly, though not rigidly, against the sides of the teeth. This forms them into a natural pucker, which acts as a cushion between the mouthpiece and your teeth, the better to counteract the pressure from the mouthpiece. It allows the lips to continue vibrating further up into the range. As your tongue and jaw move during playing, your facial muscles are also constantly moving, adjusting your lips so that they can continue to vibrate on the airstream that is being sent through them. (p. 30)

The ‘m’ shape that Sanborn describes is mentioned in band method books and demands further explanation. Philip Farkas (1989), a brass pedagogue, described his embouchure using the syllable ‘m’, “lining up the upper teeth and lower teeth with one another through proper jaw positioning will result in the air stream traveling straight through into the shank of the
mouthpiece and provide better results” (p. 8-9). Adding, Banschbach (2009) states to set the lips, “firmly (as in) pronouncing the letter, “m” to establish the feeling of the embouchure musculature” (p. 18).

Conclusion

This study will be applicable to any trumpet player wherever they may be in their development, from beginner to professional. As long as there is a definite emphasis on resonant and centered sound production, trumpet players and educators will be able to glean something from this study. Air support coupled with efficient embouchure formation can effectively produce a sound on the trumpet. This research suggests that there is an apparent consistency among pedagogues about proper embouchure formation. The depth of material available about specific embouchure types and embouchure development is far too great for it not to be included with more detail in the current band method pedagogy. As such, there is a definite need for further development on the subject of embouchure development and its subsequent integration in the classroom via texts and personal instruction. This study will further investigate and compare different embouchure types and suggest effective teaching strategies in order to aid music educators and performers alike.
INSTRUCTIONAL STRATEGIES

Because there is little pedagogical embouchure information in the current band literature about different embouchure types, the need for instructional material is evident. Existing information is deficient in detailing any problems that might occur or recommendations for improvement in forming a more suitable embouchure for beginners. Millican (2013) states, “to be effective instrumental music instructors, teachers need to possess certain highly developed, integrated skills that build on their own initial mastery of music content and performance skill” (p. 51). Subsequently, students will learn more effectively when their teachers can demonstrate the proper techniques. Many educators teach by demonstration along with explanation (Millican, 2013). In conclusion, White (1972) noted that:

1) Advanced trumpeters have more muscle activity outside rather than inside the lips, while beginners show no difference in activity.

2) Beginning trumpeters have greater activity in the upper rather than lower lip, while advanced players show no difference in degree of activity.

3) Advanced trumpeters employ more constant embouchure muscle activity than beginners when performing slurred and tongued arpeggios, small-interval lip slurs, and short-spaced repeated notes.

4) Advanced players demonstrate less difference in magnitudes of embouchure muscle activity between the last one-half second of preparation for the tone attack and during the tone than beginning trumpeters. (p. 84)

The ultimate goal of the trumpet embouchure is to keep the embouchure as efficient as possible, while using as little musculature as possible in order to achieve any demands placed on the player by the literature that they are playing.
Puffing The Cheeks

As the beginner develops their embouchure, there should be no air in the cheeks. As Banschbach (2009) states:

Beginners should be told to fill their cheeks with air and then forcibly suck the cheeks against the teeth. Repeating this over and over gives a student the feel of the buccinator muscles action. If not stopped, the buccinators bands pull at the corners of the mouth, prohibiting the full function of another. (p. 19)

While many people can remember Dizzy Gillespie’s over-inflated cheeks, this is a poor habit to develop for trumpet players. The expanded cheeks will counter the effectiveness of the buccinators’ fibers by expanding the cheeks and pulling the embouchure away from the buccinators. Those fibers will tire and will need to recuperate by resting the embouchure (Banschbach, 2009).

Using Too Much Pressure

There are certain characteristics that are caused by improper embouchure formation. The symptoms of a player using too much pressure include: lip pain, cuts, dramatic lip swelling, and/or little endurance (Bhasin, 2007). Strieder (2013) explains how mouthpiece pressure can develop:

As students, we learn early that a little bit of mouthpiece pressure helps get the next harmonic to come out. For example, we may press a little to go from low C to middle G. We use a little more pressure to get to the next C out. We use even more pressure to get E. The next thing you know, we don’t need braces anymore! The embouchure works in balance with the air. As the air blows, our lip muscles grip the air and we get the air oscillating to create the sound. As the lip muscles tire, the air blows them out and apart.
We use the mouthpiece to help hold the aperture together by using mouthpiece pressure.

(p. 49)

First, players need to determine where added pressure is added. Next, they should begin to use light pressure and “resist the temptation to add more as they ascend” (Bhasin, 2008, p. 68). Also, players should remove the right pinky finger from the ring, as the main purpose for that ring is to enable the player to place a mute into the instrument or turn pages of sheet music. Players should play a scale and discern where it is that they need to add pressure as they ascend. This will provide the player with the specific note (or notes) in their range where they need to focus their attention as they utilize the following practice strategies. Simple melodies by Getchell, Arban and Concone work very well for alleviating the pressure and learning the proper pressure/air balance. These exercises focus on slurring ascending scale lines that do not have large harmonic intervals (additional technical exercises from Clarke would work as well, while stressing light pressure, fast fingers and slow air stream). The process of implementing these into a practice routine should be a consistent daily approach. The aforementioned exercises will aid in their development away from too much pressure to a more even, light pressure approach. Results may come within a matter of months.

**Aperture Size**

Aperture size is another embouchure issue that can hinder tone production. An aperture that is either too focused (closed) or not focused enough presents problems for proper embouchure development and efficiency (Bhasin, 2007). Some specific symptoms of an aperture that is too closed are: missing notes from above, sound is sharp, ‘anemic,’ and/or high tones are difficult to center. Symptoms of an open aperture are: massive mouthpiece pressure, lip pain, and
little high register response (as in a student needs a “good day” to play high). One final symptom is that unusually large mouthpieces feel comfortable despite poor response (Bhasin, 2007).

As the concept of mouthpiece pressure has already been discussed, in addition to changing mouthpieces to a smaller size, the aperture that is too open can be remedied by the following strategies. One way to address an open embouchure is to buzz the lips alone. Strieder (2013) believes that the free buzz helps “strengthen the embouchure muscles to withstand the air pressure blowing against them” (p. 49). Bhasin (2007) concurs with buzzing the lips alone to establish resonance with the open aperture. He elaborates this technique thusly:

Practicing buzzing the lips alone for five minutes a day can be enlightening for players with a prohibitively open setting…practice buzzing ascending five-note scales, using plenty of air. While ascending, imagine focusing the lips together as if saying the syllable “mmm” or holding a grain of rice in place with your lips. Over a period of weeks, the higher pitches will come, even if just a step or two. The minor adjustments made are very similar to the adjustments needed when playing the trumpet! The next step is to gradually incorporate what you have learned: alternate buzzing upward with playing soft scales on the instrument. Gradually you will learn to focus the aperture in the same way, and high register playing will prove easier. (p. 66)

The ‘mmm’ mnemonic on the embouchure is a useful factor in creating a deliberate focus on how the embouchure feels as the player ascends. The feel of the embouchure is what is necessary in order to replicate the behavior from day to day as players overcome these poor habits. Musicians are usually alone in their practice room and they need to be able to cognitively recall specific techniques their teacher has taught them. This mnemonic is one such example.

Bhasin (2007) states the following regarding an embouchure setting that is too closed:
Players should try simple scales, softly and slowly, keeping the tone rich and full. As players ascend, they should concentrate on pointing the chin downward while keeping it flat and firm. This playing concept will gradually repair the “crushing” of the aperture while still allowing for some focusing. (p. 66)

These strategies need to be diligently implemented and critically examined as the player progresses. After a short while, the player’s sound will open and their tone will become fuller with more overtones, while their embouchure response will be more automatic. Bhasin (2007) adds, “a benefit to this approach is that the lips usually move less as a player ascends; overcompensating, “pinching” settings usually are accompanied by large, ineffective lip movements” (p. 66). Thus, the embouchure begins to function more efficiently as it adopts these new playing techniques.

**Beginning Embouchure Formation**

Streider (2013) suggests using an interesting strategy to teach the beginning trumpet embouchure. He notes that “there are generally two types of embouchures: embouchures formed by the muscles (free buzz) and embouchures formed by the mouthpiece (pressure)” (p. 48). Instead of forming the embouchure without the mouthpiece, or buzzing without the mouthpiece, he suggests using a coffee stir straw placed between the lips and then say the letters “m & m” as in the candy. This helps set up the correct aperture and embouchure. The player should hold the “m” and blow. As he/she does this, Streider slides the mouthpiece over the straw to the lips. As the student continues to blow, he gently pulls the straw from the mouthpiece. This motion creates a buzz within the aperture of the embouchure in a very natural and relaxed manner. He remarks that most students are successful with just a little coaching. If one does this approach concurrently with free buzzing, it will maximize the beginner’s chance for success. Griffin
(2007) also uses the ‘mm’ approach. He instructs the beginner to have their corners firm and set as they push air rapidly through the opening, “as though they are trying to blow a piece of rice off their lip” (p. 47).

There are characteristics that one should be aware of in order to help make the trumpet player as successful as possible. After all, each player’s embouchure and dentition are unique and as such, instructors need to set their students up for success as much as possible. As Griffin (2007) states so eloquently, “ignoring students’ physique is ultimately selling them short, since they will experience the most success when their instrument is a good match for them” (p. 46). Examining a beginner’s dental structure will aid in determining their success with the trumpet; specifically, if the beginner has any “front teeth that are protruded, side-ways or missing, the student may be limited in their comfort and embouchure development if they are unable to make the necessary adjustments” (Griffin, 2007, p. 46). Another trait to be aware of is if the beginner has an overbite or underbite, which will also greatly hinder their progress. If the beginner chooses to play the trumpet, the jaw will need to be either pushed forward or receded in order to align the teeth properly for the embouchure to work easily (Griffin, 2007). This is not to say, that a beginner with protruding teeth or a huge overbite cannot be successful; however, it will require greater effort, which might discourage beginners more so than those with more aligned dentition.

Hunt (2000) describes the lips and the dentition as well:

A. The lips should be neither too fleshy nor too thin. Heavier-lipped players might be steered toward the low brass mouthpiece.

B. The mouthpiece will seek a high point on the teeth, whether in the middle or off to one side. Don't interfere.
C. Most people have an overbite, but if it is too pronounced it will either cause the trumpet to be held like the clarinet, or the head will be thrown back because of the teacher’s insistence upon “keeping the bell up.” You might suggest that the child consider a baritone or French horn, as an alternative.

D. Increasingly, we (instructors) are having to deal with orthodontics. In some instances, the writer feels that the braces actually contributed to the development of the “decreased pressure” embouchure (p. 6-7).

Griffin (2007) also addresses lip size as Hunt did. However, he suggests that instead of directing the beginner to a low brass instrument, he suggests having slightly larger cup size mouthpieces available for them. He continues with the observation that, “a large inner rim will allow the student’s lips to vibrate, while an inner rim that is too narrow will pinch into the fleshy part of their lips, causing issues in tone, aperture flexibility, and endurance” (p. 46). Conversely, those beginners with thin lips should use a mouthpiece with a narrower rim; otherwise, the beginner might apply too much pressure. Occasionally, there might be beginners who have a ‘teardrop’ lip, in which the front part of the lip comes down further than the rest of the top lip. This trait leads to an “unreliable response, fluttering in the sound, a downward air stream, and aperture control issues” which is not well suited to trumpet playing. Griffin (2007) recommends a Schilke 13C4 mouthpiece for students with a teardrop lip as it has more “rim surface area and is slightly more flat, helping to stabilize the teardrop portion of the lip” (p. 46).

Once the mouthpiece has been chosen, embouchure development is contingent on the vibration of the lips, or ‘buzz.’ Hunt (2000) details his teaching strategy with the following attention to the buzz:
A. Demonstrate the “buzz” without the mouthpiece. Have the student do the same, while encouraging her to match your pitch. At this time, it will often be noted that the lips will be pressed together too much too loosely. This will result in a horse-like “flapping” of the lips. Urge the student to press their lips together more firmly, which will result in a finer “mosquito-like buzz,” but not so tightly that the airstream can’t break through.

B. Demonstrate the “buzz” with the mouthpiece only. Attempt to place the mouthpiece in the center of the child’s lips (left to right) with one-third on the upper lip and two-thirds on the lower lip. If any high points on the teeth preclude the above placement, the player will alter it. Do not insist upon “the” correct formula for mouthpiece placement.

C. Encourage the student to match pitches with you. Have him “buzz like a siren,” which will cause a gradual tension and loosening of the embouchure. Also, urge them to “buzz” tunes of their choice.

D. Finally, place the mouthpiece in the trumpet and remind the student of the “mosquito buzz,” and that they should touch the mouthpiece to the lips, with just enough pressure to insure that the air doesn’t leak from around the lips. (p. 7)

Schlabach (1999) states that when buzzing, “it is very important to produce a large, resonant, ‘buzzy’ sound on the mouthpiece using a relaxed air stream” (p. 67). He continues, stating:

It must be stressed that the mouthpiece alone should be approached with the same free blowing that one would use to make a full trumpet sound in a concert hall. The student will learn to expect a full, vibrant sound even on the mouthpiece because the ear will improve its control of the quality of sound, as well as pitch and accuracy. (p. 67)

Schlabach (1999) details how he approaches the use of buzzing the mouthpiece in a few simple steps:
1) Students can use any repertoire, exercise or warm-up, but simplicity must be stressed foremost.

2) Begin with long tones, slow and easy lip slurs, tonguing patterns and scale patterns with mixed articulations. (Clarke’s *Technical Studies* are recommended)

3) If students have trouble moving between notes of slurs, they are over adjusting their embouchure or compromising the air stream instead of using a constant flow of air.
   a. It is recommended that the student at this point should slide up and down between notes to learn the most efficient way to move from note to note.
   b. Then the ‘slides’ should be gradually speed up over time until moving between the notes becomes easier.

4) After the player improves, more challenging material can be added such as arpeggios, multiple tonguing or more challenging repertoire.

5) Students might have a ‘blank spot’ on the mouthpiece where the sound will disappear, but this will improve with patient practice.

6) Alternating between mouthpiece practice and instrument practice will produce the greatest results, too. (p. 67).

The next stage in the development of the embouchure is the balance between the air flow and the embouchure.

**Air/Embouchure Balance**

Breathing is an integral part of the trumpet embouchure. Streider (2013) suggests that the best approach is to teach beginners, “to use ‘quality’ air while encouraging them to free buzz the full range of the instrument” (p. 49). The importance of free buzzing is beneficial to students, but it is not the same as playing the trumpet, as it is harder than playing the trumpet. Specifically,
buzzing is a function of the embouchure within the mouthpiece. Practicing buzzing alone will aid in developing the resonance of the tone while using the proper air support to regulate the buzz. Streider (2013) continues to suggest that there are certain buzzing exercises, which are designed for a specific purpose. However, these exercises are not for actual performance or musical applications. Instead, they are designed to help the body respond to various stressors. For example, football players use weight-lifting, but those exercises are not always directly about the techniques of playing football itself. The specific technique of free-buzzing only works on one function of the total embouchure, but is integral in the entire formation of embouchure and production of tone. Streider (2013) cautions that students should start with small increments of time and gradually increase over a period of months. To that end, Strieder focuses on three specific areas when working with beginners:

1) The correct usage of air.

2) The center of pitch.

3) The suppleness of lips. (p. 47)

Strieder (2013) continues, “the embouchure should be the only thing creating resistance. The resistance increases as we ascend into the upper register and decreases as we descend into the lower register. The air has to be buoyant against this changing resistance and needs to be able to respond to the different registers of a piece of music. This is why we often have problems with flexibility.” (p. 48). Griffin (2007) states, “the air should be fast and centered, (if their lips do not vibrate, the student may be holding or stretching them too tightly, or they may need to blow faster air)” (p. 47).

When using air in order to be most efficient, Campos (1995) states:
You can play without destructive tension by remaining as relaxed as possible at the moment of inhalation...Players who take a full breath will use less energy to expel a given quantity of air than players who take a partial breath. (p. 89).

Continuing with this reasoning, McLaughlin (2001) comments that there are only five simple things needed for proper breath: “relax, breathe, stay relaxed, blow, project” (p. 6). McLaughlin (2001) further expounds on his instruction by insisting that each octave has a different feel as the air is released. Namely, he writes:

For the bottom octave and a half of the horn you just LET the air out. Do NOT tense anything. Tension only tires you out. For the next half an octave you pull your stomach in about 1 inch. This makes the chest cavity smaller and adds some compression. For the next octave to 2 octaves you continue to pull your stomach in farther for each higher note. As you reach your top note you life your stomach up toward the lungs. This creates a great deal of compression with NO tension. (p. 6)

However, Campos (1995) contends that, “if you just focus on blowing, the body will contract the proper muscles- you do not have to think about it” (p. 89). To that end, it seems that McLaughlin is writing about the compression required to perform in the upper register and, as Campos states, only using as much body movement as is needed. McLaughlin has only put the practice into words that can be used in instruction. In another article, Campos (1998) suggests a method that can be used to rid the body of excess tension caused by forcing air support:

One of the most effective ideas to eliminate excessive tension is Cat Anderson’s 20 minute ‘G.’ ...Used consistently over a period of time, it can overcome problems ranging from excessive mouthpiece pressure to poor response and lack of endurance. It also greatly enhances breath capacity, control of dynamic range, and helps clarify the tone.
Cat instructed the reader to play a second line g “like a whisper” for 20 minutes. (…the player can take the horn off the embouchure for a few seconds between tones.) …It is through constant repetition of a new, more relaxed and efficient way of playing that we eventually overcome excessive tension in our performance. (p. 44, 51)

The abdomen affects compression of the air; but compression is also affected by the tongue position. Specifically, the higher the tongue arch, the faster the air velocity. If the tongue is not in the correct position, problems with the sound production can result.

**Tongue Position**

Some identifiable symptoms of inappropriate tongue positioning are: “a dull sound, poor intonation, missing notes from below, in ability to lip trill, and/or poor flexibility, especially from low to high registers” (Bhasin, 2007, p. 66). For preliminary practice in overcoming the habit of poor tongue position, simple scales are best. Bhasin (2007) states:

> Work upwards, softly, and experiment with focusing the space inside your mouth with your tongue for optimum tone and response. Try whistling, intermittently for a practice model: if you watch yourself whistling an ascending scale in a mirror, you’ll notice that the aperture does not change size much. This is because as the tongue rises, the air pressure increases (you also blow a little harder), and pitch raises. This principle is the same as a teapot whistling; the aperture does not change in size, but pitch rises nonetheless! (p. 66)

Bhasin (2007) lists additional tongue position exercises that are found in the following method books:
1) Arban p. 39, #5. To be performed slowly and softly. Reverse the dynamics, so as you ascend you do not force out high tones by simply blowing harder. Try to affect pitch change primarily with the tongue, just as if you were whistling.

2) Schlossberg #18. Ignore printed dynamics and play softly, channeling the air with your tongue position, and keep a ringing sound.

3) Arban p. 44 #22. To be performed slowly and softly.

4) Arban p. 41 #14. Upward leaps should be the result of syllable changes as well as increased airflow. Playing softly will isolate this technique. Repeat with frequent rests.

(p. 66)

Other Devices And Methods

Trumpet players usually begin in the 5th or 6th grade as part of their evolution into trumpet playing. During this time, their body is still growing; namely the jaw, while their tendons and ligaments are more flexible than when they are adults (McLaughlin, 2011). Subsequently, children are using more effort to achieve basic results. For example, the muscles are weaker and these beginners need to use approximately 50% -60 % of their strength to play lower notes. This becomes problematic because as they grow older, they continue to use the same effort to play the lower, most basic of notes (McLaughlin, 2011). Because of this tension in beginning embouchures, McLaughlin (2011) recommends using a didgeridoo to relax the embouchure that has tightened over years and years of playing with too much tension. His methodology is as follows:

Blow into the didgeridoo with your lips centered in the mouthpiece, say ‘paaa’ and blow air. You want to relax the face and lips until you get a lout tone. It will be below our pedal c (B-flat trumpet) and LOUD when it finally pops out. (p. 8)
The reason that this is effective over a long period of time is that it works well in conjunction with other non-pressure methodologies, discussed earlier, to effectively retrain the embouchure in a more relaxed manner. The end result is a more focused tone, centered pitch throughout the range of the instrument, and longevity of technique.
DISCUSSION

The chart located in Appendix A is a graphic organizer of specific embouchure methods that were examined in this study. These methods were chosen because of their different approaches to the formation of the embouchure and how each one is used in practice. It should be noted that each method specializes in training the embouchure according to the author’s recommendation. As the texts were examined, exercises were engineered to address strengths and weaknesses inherent in each embouchure method. It was the intention of this author to understand each embouchure method’s formation according to mouthpiece placement, breath, use of syllables, pucker, smile, pivot system, mouthpiece pressure, lip aperture, pressurized airstream, use of pedal tones and resting as long as one plays.

Mouthpiece Placement

Many of the trumpet method books that were examined shared the same recommendation about where to place the mouthpiece on the embouchure. Callet, Civiletti, Maggio and Gordon suggest placing the mouthpiece more on the upper lip than the lower lip. This is an advantageous position in that it allows for more potential lip tissue to vibrate as the air moves through the aperture tunnel and causes the top lip to vibrate, thus establishing the sound wave. However, Caruso, Smith, Hunt and Meregilliano do not suggest one position over another. Their stance suggests that the mouthpiece should be placed on the embouchure in the most natural way possible. As noted earlier by Hunt (2000), the mouthpiece will seek a high point on the teeth upon which to rest. This author recommends that if the lips do not present issues such as a ‘teardrop’ shape or are really thick, then wherever the mouthpiece lays naturally on the embouchure is the most efficient location for the student. In the case of thick lips or the
‘teardrop’ shape, this author would recommend testing out larger diameter mouthpieces for those students in order to compensate for their physical traits.

**Breath**

All of the authors recommended taking a breath either through the nose, as in Callet and Civiletti, or through the sides of the mouth as in Caruso, Gordon, Hunt, Maggio, Meregilliano, and Stamp. Callet and Civiletti endorse an anchored tongue approach to the embouchure that stresses little air intake, so as to not overblow the embouchure. Instead, the pressurized air stream caused by the tongue in conjunction with the bottom lip causes a large mass of vibrational tissue that does not require a large volume of air to produce a resonant pitch. This differs from intaking air through the sides of the mouth, which means that the embouchure needs to be reset each time a breath is taken. Subsequently, using an anchored approach is a more efficient use of the air stream as opposed to taking in air through the sides of the embouchure itself. Also, it should be noted that the concept of breath control refers to taking in only as much air as needed for the specific passage that is to be played. Any excess air becomes stale in the lungs and will need to be expelled instead of withholding it while playing. Ultimately, the breath should be as relaxed and as energized with oxygen as possible and should be completely used up during each phrase that is played. Finally, as was practiced in the Stamp (1978) method, the breath should be taken in tempo with the music. It is the opinion of this author that even though the other method texts did not implicitly mention taking a breath in tempo, this is a good practice to employ.

**Syllables**

The use of syllables is recommended with almost all of the methods, except Civiletti and Callet. There is a difference in using syllables for range development, as in the case of narrowing the oral cavity in order to compress the air stream further before it enters the horn. The other use
of syllables comes into play when there is a requirement to play music in different contexts, such as bright playing or chamber music. Performers might employ syllables to use in different genres of music, depending on how focused on their sound they are and how they can emote using syllables to do so. In these method books however, the use of syllables covered both topics. Some mentioned using them for range development and some mentioned using them for enhancing acoustical properties. It is the opinion of this author to use syllables to achieve whatever goal is necessary while playing.

**Pucker and Smile Approach**

These two topics were put together because they both address how the lips are formed in the embouchure. First, it should be noted that none of the method books recommend using the ‘smile’ approach to forming the embouchure. This is not recommended as stretching the lip tissue across the lips by pulling the corners of the mouth back limits the vibrational surface area of the lips. Subsequently, the sound becomes very thin and the embouchure is inefficient. Conversely, all of the method books (except Caruso, which did not mention it) recommend using the ‘pucker,’ or ‘bunched chin’ approach. The ‘smile’ approach does the opposite from the previous setup because it contracts the orbicularis oris to push the lip tissue into the mouthpiece. When using the ‘bunched chin’ approach, the mentalis muscle moves up and again brings more lip tissue into the mouthpiece. Both approaches increase the amount of lip tissue in the mouthpiece and allow for a greater vibration in the aperture tunnel, which produces a fuller, more resonant sound.

**Pivot System**

Stamp, Civiletti, Callet and Hunt all agreed that using a pivot to aid the embouchure in changing registers is acceptable. Maggio, Caruso and Meregilliano did not advocate or
recommend using a pivot. The use of the pivot, according to McLaughlin (2001), is to maintain a more open airway and clearer tone. The concept is simple:

As you play higher and lower notes the air stream will slightly move in the mouthpiece. If we can keep it lined up with the throat hole the sound is better. The SLIGHT bell movement will produce an opposite movement or realignment of our lips to the mouthpiece. (McLaughlin, 2001, p. 10).

This concept is used to help the air stream throughout the horn. It is this author’s opinion that one should embrace the most natural position of the horn angle to the face. If that means moving the horn slightly up to descend in pitch and moving the horn down to ascend in pitch, then it is acceptable. However, the motion should not be drastic and should not do anything more than push or pull the lips into the airstream to keep everything lined up (McLaughlin, 2001).

**Mouthpiece Pressure**

Mouthpiece pressure is something that all of the method books agreed upon. Specifically, players should use as little pressure as possible while playing the instrument. The only pressure should be for sealing the mouthpiece to the embouchure so that no air leaks. Also, not having pressure allows for the embouchure to remain supple, flexible and able to vibrate in the cup of the mouthpiece. It has already been discussed that too much pressure eliminates the vibration of the lip tissue and crushes the aperture tunnel, which is where the air passes through the embouchure. This author also concurs with using as little pressure as possible, as this is a beneficial habit, which adds to an efficient embouchure.

**Lip Aperture**

The lip aperture is the opening in the embouchure where the vibration begins and causes the sound wave to begin before it travels into the instrument. As stated earlier, it is beneficial to
have an aperture that is more closed than open. All of the authors recommend a closed aperture over an open aperture, except Hunt, who did not comment on lip aperture. It is the opinion of this author that a more closed approach lends itself to a more efficient embouchure as the closer the orbicularis oris muscle is, the more natural the feeling. Specifically, it requires more effort to maintain an open aperture than relaxing into a closed aperture setting. Also, the sound quality of a closed aperture is more resonant than an open aperture setting (McLaughlin, 2001).

**Pressurized Airstream**

All of the authors agreed that having a pressurized airstream is effective in embouchure development and execution. This author would add that a pressurized airstream is more charged with energy and oxygen. Also, the pressurized airstream is a result of a relaxed blow, proper compression with the lungs and the tongue and a focused orbicularis oris muscle contracting on the airstream, thus creating an aperture tunnel for a fast stream of air. As McLaughlin (2001) elaborates, “the aperture controls your tone quality, range and endurance. Apertures fall in 3 types: flat, causing a thin, shrill sound; oval, causing the full sound we all seek and round, causing a dull too dark sound” (p. 26). Once again, it is the vibration from the lips touching each other that causes the sound, the more lip tissue that is vibrating, the greater and more resonant the sound quality. As Callet (1987) stated, “both lips touch each other all across the mouth” (p. 6). An interesting concept brought up by McLaughlin (2001) is that:

When we play in the pedal register the lip aperture is huge. For the sake of ease of numbers let’s say that the aperture size for a double pedal C is 64 inches.

Every octave higher that we play the size of the aperture is cut in half.

Double pedal C = 64 inches

Pedal C = 32 inches
Low C = 16 inches
Middle C = 8 inches
High C = 4 inches
Double High C = 2 inches
Triple High C = 1 inch (p. 28).

This is an example of the width of the aperture and how it relates to pedal tone production.

**Pedal Tones**

Pedal tones are integral in relaxing the embouchure and keeping the aperture open while blowing a slow and full air stream. Additionally, McLaughlin (2001) states that playing pedals “teaches us to make BIG lip movements” (p. 29). All of the authors of the method books recommend using pedal tones. It allows for fresh oxygenated blood to invigorate the muscles of the embouchure in order to rest them after use. Additionally, it moves the embouchure muscles in the opposite direction from contracting upon the airstream which is highly beneficial to maintain embouchure flexibility and longevity.

**‘Rest’ As Long As You Play**

Finally, most authors agree to rest as much as one plays. The main benefit from this is that it provides the embouchure a period of rest, which aids in keeping the embouchure resilient which is what will help to ensure proper efficiency while performing the repertoire. Also, the concept of resting allows the performer to maintain focus on their material that they are practicing. Keep in mind, this is a concept that is used primarily in practice setting as the opportunity to rest while playing is not always available. Conversely, Callet and Civiletti’s method books do not establish a policy of resting while one plays. The main reason for this is because the anchor tonguing involved in their embouchure types are efficient in using little air
across a large lip mass. Subsequently, the large vibration caused from the tongue in contact with the lips does not tire as quickly because of the little volume of air that goes through the embouchure. So, according to this characteristic, the anchor tongue embouchure is very efficient and does not succumb to as much fatigue as other embouchure types.

**Conclusion**

The evaluation of the different trumpet method books provided a few interesting conclusions:

1) There is no ‘all-encompassing’ embouchure type for trumpet players. Each trumpet player is individual and should be approached as such with their unique strengths and deficiencies.

2) One method might work with someone for a period of time; however, there are other techniques that can be implemented, or borrowed, from another method that would progress the student through their challenges.

3) The main thing that students and educators must default to is their sense of hearing. Specifically, is the sound that is being produced a good tone with resonance, proper support and an efficient use of their embouchure? If it is not, then hearing is the first indicator that something needs to change.

4) This study is not all inclusive in its scope. It merely is a resource for educators to use and it is the hope of the author that this study will be of great use for those educators who need more information about embouchure development.

To that end, the author recommends the above strategies to be used whenever applicable in any teaching situation. Many of these techniques would best be used in a one-on-one situation, such as private lessons or brass sectionals during school hours. It is also recommended that when
implementing these strategies, that some form of tracking the student’s practice be used. Perhaps the educator could write a practice plan incorporating these strategies along with a section for noticing improvements in the student’s playing. It is important for the student to have a tangible record of their accomplishments since many of these strategies will take weeks to months of diligent work and the results might not be as easily evident from day to day.

To continue this research further, seeking information from professional trumpet performers and educators could be used to find out how they use and teach embouchure techniques. Issues such as private teaching experience; high and low range; effectiveness of teaching the upper tessitura; use of syllables; use of embouchure mechanics in instruction; tension; compression; breathing; mouthpiece construction; density of sound; intonation and the ideal trumpet sound could be surveyed. The proposed survey is located in Appendix B. The survey data could then be analyzed to see how other trumpet professionals use their embouchure and how certain embouchure issues are addressed.

Also, further research on other trumpet methods could be investigated. Additionally, investigating any development of new information that continues to present itself. Researching current and past issues of the International Trumpet Guild Journal would provide a history of pedagogical information that has been published, as it relates to embouchure. It is the hope of this author to continue this research and to write a blog where these ideas can be shared with other educational professionals.
INSTRUCTIONAL IMPLEMENTATION

Many different strategies have been examined with regards to different problems with embouchure development and how to effectively influence students’ embouchures in order to make them more efficient. Differentiation of techniques is necessary in order to address different skill levels and ability levels of the students. As stated earlier, the best-case scenario to implement these strategies would be in a one-on-one setting. If that is not available, this author recommends that teachers give the students what instruction is possible in the time frame allotted, and then implement a written plan for the most effective strategy according to student needs. Then, as in all cases, regular checking up on the student’s progress should be given, along with praise and additional recommendations for progress.

**Beginner**

For relaxed embouchure development, this author recommends lip buzzing without the mouthpiece. Begin with buzzing easy tones, in whatever range is most comfortable to the beginner. Demonstrate a pitch in their range, and then ask them to mimic your sound. A tool that is beneficial is a mouthpiece visualizer and a mirror, to show the student what their embouchure looks like as it vibrates. Educators should look for lip cushion, pinched lips, collapsing lips and if the embouchure is touching. Any of these might be causing an issue with the buzz and should be addressed immediately. Students should practice buzzing simple melodies according to their ability. The teacher should meet them where they are. If the student cannot buzz higher than C4, then that is where they should begin. Begin buzzing pitches and focusing on maintaining a consistent, rich buzz. Instructors should trust their own ears and be diligent to address any inconsistencies they hear. Finally, teachers should require students to buzz for a few minutes then gradually extend the time.
Additionally, focus on breathing in tempo for buzzing. This is a crucial component in ensuring that students will maintain air focus while they are buzzing. If the student is playing in time, ask that they take a relaxed breath one beat before the buzz begins. This concept should be mastered over a period of a few weeks and then students should move on to using the mouthpiece to buzz in a similar manner, beginning with simple long tones followed by simple scalar melodies.

**Intermediate**

After the students have mastered buzzing basic long tones and simple scale melodies with and without the mouthpiece, it is recommended that process continue with progressively more difficult material. Additionally, the student should focus on playing softly. The student should train their embouchure to play softly; so softly that the sound begins to breakup. Students should practice so softly to the point of uncomfortability. Effort should be placed on students spending time playing softly and buzzing the mouthpiece every day during their practice regimen; preferably, spending 20% of their total practice time working on buzzing and soft practice.

**Advanced**

Advanced students should be able to buzz with a relaxed setting for extended periods of time; 10-20 minutes at least. Continuing, these students should be ale to buzz complex melodies on the mouthpiece, as well as single and multiple tonguing. These students should be focused on trying to extend their resonant buzzing as long as possible with more complex literature. Additionally, they should be able to focus on listening to the sound of their buzz with and without the mouthpiece and continually maintaining a relaxed embouchure set.
Conclusions

These strategies are to be used concurrently, or in place of embouchure issues that the students might have. If there are recommendations that were previously made, then the educator should address those issues before beginning a regimen of relaxed buzzing. It is paramount that the student be able to buzz with a good relaxed breath and focused sound. Additionally, if there are changes that need to be made to certain embouchures, it is highly recommended by this author that slow, deliberate instructional strategies be implemented before progressing onto more challenging material. This author advocates subtle changes to the embouchure, especially for beginners, as they will need constant supervision to ensure that those changes take effect. Making changes too quickly, without time to absorb the changes, will likely sabotage a player’s development.

Additionally, there are wrong ways to approach embouchure development. Namely, using too much pressure or too much air to produce pitches. Too much pressure introduces a concept that will choke the vibration of the player and will severely limit their range, as they will tend to use more pressure as they ascend and their endurance will suffer greatly. Students that overblow their embouchure will be confronted with an aperture that is too open. Even though they might be able to overblow the partials of the instrument and achieve a modicum of success in the upper register, eventually their range will top out. This is because their embouchure has not been trained to focus the airstream, which is necessary in the upper register. These two main issues will sabotage the desires of any player who wishes to play the trumpet effectively.

Trumpet players who appear to be squeezing out their notes while they play in the upper register are not forcing the air out of their lungs nor are they pinching the embouchure. Those players are focusing all their energies on playing relaxed and maintaining a secure aperture.
tunnel while they perform that specific part. In order to become successful on the trumpet, players need to address fundamental issues such as embouchure formation and air support. It is not enough to rely on innate natural ability, as a challenge will always present itself to playing. How one reacts to those challenges and overcome those deficiencies are paramount in becoming a talented musician. This requires attention and deliberate focus. After all, playing the trumpet is as much about finesse as it is about strength and it requires more mental acuity than physical strength. If players are not where they envision themselves to be, then they should seek out qualified instruction and not be satisfied until they achieve their own goals as a musician. The knowledge is out there to be found and it is this author’s hope that this study will provide assistance with that search.
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Appendix A

<table>
<thead>
<tr>
<th>Method Book Author</th>
<th>Callet/ Civiletti (Trumpet Secrets)</th>
<th>Callet (Superchops)</th>
<th>Civiletti (TCE)</th>
<th>Caruso</th>
<th>Hunt</th>
<th>Maggio</th>
<th>Meregilliano</th>
<th>Gordon</th>
<th>Stamp</th>
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<td>Yes</td>
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</table>
The use and instruction of trumpet embouchure methods

1. How long have you been teaching privately?
   - <1 Year
   - 1-5 years
   - 6-10 years
   - 11-15 years
   - 15+ years

2. What is your current playing range (B-flat trumpet)?
   (Note: middle C is C4)
   - Below C6
   - D6-C7
   - D7-C8
   - Above D8

3. What is your current low register range (including pedal tones)?
   (Note: middle C is C4)
   - I don't play pedal tones.
   - Down to C3
   - Between C2-B2
   - Between C1-B1
   - Below C1

4. What percentage of your students have you had achieve the upper tessitura of the B-flat trumpet through your instruction? (C6 and above)
   - 0%
   - 1-20%
   - 21-50%
   - 51-75%
   - 76-100%

5. Syllables are essential in teaching range.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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### Comparative Analysis of Trumpet Embouchure Method

**6. Embouchure mechanics are an important part of your instruction.**

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
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**7. Is there a specific embouchure type you teach/endorse?**

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
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If you do, briefly describe your method.

8. **Tension in differing registers hinders endurance.**

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<tr>
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<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
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<th>Strongly Agree</th>
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9. **Compression is primarily created with the tongue.**

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<tr>
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<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
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10. **Upper register playing is primarily a learned trait.**

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<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
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11. **Compression is integral in upper register playing.**

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<thead>
<tr>
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<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
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12. **Embouchure mechanics directly correspond to ideal sound production.**

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<tr>
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<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
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The use and instruction of trumpet embouchure methods

13. Taking a breath through the nose to play is not recommended for trumpet playing.

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<tr>
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<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
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14. Wider mouthpiece diameter equals bigger sound.

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<tr>
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15. Narrower mouthpiece diameter equals smaller sound.

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16. Shallow mouthpiece cup depth equals higher range.

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<tr>
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17. Deeper mouthpiece cup depth equals fuller sound.

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18. Density of trumpet sound comes from expanding the vibrational lip tissue.

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19. Breathing through the nose is always encouraged.

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20. Intonation of the trumpet is primarily based on embouchure mechanics.

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21. Syllables are important in concept of trumpet sound.

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<tr>
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22. The higher the pitch, the more focused the air stream.

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23. Wider sound equals focused sound.

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The use and instruction of trumpet embouchure methods

24. Of the following players, which has the best (most ideal) trumpet sound.

☐ Wynton Marsalis
☐ Harry Gliantz
☐ Miles Davis
☐ Other (not listed above)

25. Who were a few of the trumpet players you listened to that influenced your sound?

26. Please sign with your name in the box below.