

The String Teacher's Toolbox: An Investigation of the Use of Teaching Aids to Develop Left
and Right Hand Set-Up in Beginning String Students

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ABSTRACT

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Statement Of Purpose

The purpose of this empirical study is to investigate the use of teaching aids to support or remediate left and right hand setup in beginning string students. In this study, teachers of beginning string students will be surveyed to examine what aids, props or devices they use to help their students establish or correct setup of the left and right hand. The data will be compiled and analyzed to create a comprehensive list of aids currently in use in many beginning string classrooms, their purposes and perceived effectiveness.

Rationale

The setup of the beginning string player's left and right hand is a critical component for their success and future development in playing the instrument. A good setup ensures that the student is holding their instrument correctly and facilitates the mechanics of playing the instrument by preparing the left hand fingers for good intonation and the right hand for straight bowing as well as good tone and articulation. In the private studio, the one-to-one teacher/student ratio allows the teacher to focus on setup by using demonstration, physical manipulation of the student's hand and by providing constant feedback to enable the student to develop good position in the early stages of study. In small and large group lessons, the teacher to student ratio becomes one-to-many, and although demonstration and physical manipulation are part of instruction, the amount of individual attention that can be given to corrective feedback of setup becomes a challenge. String teachers who are required to give group instruction, often use aids, props or devices that help the students find or maintain the desired hand shape for proper setup. Many of these aids are homemade, though some are commercially available. As a teacher of beginning string students in large group settings, I am continually looking for information about aids that could help me in giving more frequent corrective feedback to my students. Knowledge of these aids is typically passed along using word of mouth by strings teachers or demonstrated in workshops. There is no comprehensive information available that lists these aids and their use in beginning string instruction. This empirical study will survey teachers of beginning strings students to find out which aids they use, how they use them and their perceived usefulness in beginning string instruction. The study will also produce a comprehensive list of all teaching aids used by the respondents for the benefit of strings teachers in the field.

Dedication

To the teachers of beginning strings students, for whom the sounds of “Twinkle, Twinkle, Little Star” remain a joy signifying the incredible progress from a student’s very first touch of a beautiful wooden instrument to the ability to play simple tunes with the enthusiasm inspired by their hardworking teachers – I dedicate this project to you.

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Chapter 1

Introduction

Statement Of Purpose

The purpose of this empirical study is to investigate the use of teaching aids to support or remediate left and right hand set-up in beginning string students. In this study, teachers of beginning string students will be surveyed to examine what aids, props or devices they use to help their students establish or correct set-up of the left and right hand. The data will be compiled and analyzed to create a comprehensive list of aids currently in use in many beginning string classrooms, their purposes and perceived effectiveness.

Rationale

The set-up of the beginning string player's left and right hand is a critical component for their success and future development in playing the instrument. A good set-up ensures that the student is holding their instrument correctly and facilitates the mechanics of playing the instrument by preparing the left hand fingers for good intonation and the right hand for straight bowing as well as good tone and articulation. In the private studio, the one-to-one teacher/student ratio allows the teacher to focus on set-up by using demonstration, physical manipulation of the student's hand and by providing constant feedback to enable the student to develop good position in the early stages of study. In small and large group lessons, the teacher to student ratio becomes one-to-many, and although demonstration and physical manipulation are part of instruction, the amount of individual attention that can be given to corrective feedback of set-up becomes a challenge. String teachers who are required to give group instruction, often use aids, props or devices that help the students find or maintain the desired hand shape for proper set-up. Many of these aids are homemade, though some are commercially available. As a teacher of beginning

string students in large group settings, I am continually looking for information about aids that could help me in giving more frequent corrective feedback to my students. Knowledge of these aids is typically passed along using word of mouth by strings teachers or demonstrated in workshops. There is no comprehensive information available that lists these aids and their use in beginning string instruction. This empirical study will survey teachers of beginning strings students to find out which aids they use, how they use them and their perceived usefulness in beginning string instruction. The study will also produce a comprehensive list of all teaching aids used by the respondents for the benefit of strings teachers in the field.

Expected Findings

When comparing notes with colleagues about our own experiences being taught to play string instruments as young beginners, I have heard some of them declare: "My teacher used to tape a thumbtack under the neck of my violin to keep me from flattening my wrist like a pancake". "Well, mine used to tape a stick on the back of my hand and wrist!" Teaching aids for setting up the beginning strings student have come a long way from the thumbtack or stick trick. Our culture would now consider those methods a rather cruel way to learn an important lesson. But, as a new teacher of beginnings strings students, when I saw how difficult it was to develop and maintain good left and right hand set-up when seeing groups of 8 to 16 beginners just once a week - my thoughts turned to the thumbtack trick. What new developments have there been with teaching aids, do teachers use them, and if so, how effective are they in developing or remediating a student's set-up?

I have developed a survey to discover what types of teachers use teaching aids, what aids they choose to use, how effective the teacher perceives a particular aid to be, is the aid used only for private lessons or when teaching a group of students, and is the aid used only in the lesson or

classroom or is it used for student self-monitoring or peer tutoring? I hope to develop a list of aids that are currently in use, both commercially available and even more importantly, homemade teaching aids.

As an experienced music teacher, but new to strings, I am still learning the available pedagogical tools available and in use, so it is possible that my hypothesis may be made with incomplete information. I expect that the results of this survey will give me more clarity. My experience with teaching beginning strings students leads me to hope that there will be teaching aids available that could act as surrogate teachers without the sharp wit of a thumbtack. But is this the desire of an inexperienced teacher? Will I find that the level of experience of the teacher increases or decreases the use of teaching aids? All aids or just certain aids? I hypothesize that the more experienced the teacher, the less need for the teaching aid. I predict that more experienced teachers will report that they do not find particular aids, or aids in general, effective or that their teaching skills are such that the aids would be unnecessary. I expect the data to show that less experienced teachers will embrace the use of aids, particularly with large groups of students, provided the cost and/or implementation are not prohibitive. I predict that when teaching aids are used, there will be a correlation between the size of the ensemble and the type of aid. For instance, I expect that some devices, such as fingering tapes, will be widely accepted and used by a majority of teachers with any size group. But I also expect that some devices, such as those designed to help guide the bow straight, will only be used in private lessons or very small groups as the aid will either be cost prohibitive or if homemade, difficult to implement and monitor in large groups. I predict that the larger the ensemble, the less teaching aids will be used. And finally, I hope that the survey will result in examples of creative and innovative uses of

inexpensive materials for homemade teaching aids that could easily be adopted for use by the harried and overwhelmed beginning strings teacher.

Chapter 2

Background

Context Building

This study had its genesis in my experience as a first year strings teacher teaching a group of eight third grade violin students. One of these students was blind and I was struggling to find ways to help her to experience the essential posture to hold her instrument correctly, wrist and hand shapes necessary for fingering with good intonation, and the muscular and kinesthetic awareness that is required to bow straight. Even though she had an aide who was assisting her, the student required a significant amount of my time for use of pedagogical touch to enable her to set up her musculature correctly so she could create a mental image necessary for her to begin to establish the habits necessary for good violin playing. Additionally, although the other students in the class could see my modeling and could therefore attempt to imitate it, they were getting less attention from me for correcting their misinterpretations of physical set-up. (See Appendix A: Terminology for definitions of “pedagogical touch”, “set-up” and other unfamiliar terms in this thesis.)

So I began to seek out devices that could help not only my student who was blind, but also the other students as well, to help their muscles to maintain the shapes I had set for them as I moved from student to student. In my search, I found a number of commercial devices that claimed to help set up a straight left wrist, a good bow hold, or to help the student learn to bow straight, but the cost was prohibitive. In reaching out to other strings teachers about the problem, I discovered that there seemed to be many teachers using homemade devices to do the same work as the commercial ones. And many teachers who were not aware of these devices seemed excited by the ideas generated in the social media conversations generated by my queries. As I

began to use some of these ideas and learning whether or not they helped my students, I became intrigued with the idea of formally researching this aspect of strings pedagogy.

Violin Pedagogy Through the Centuries

As opposed to pedagogy in other fields of education, such as mathematics and science, strings pedagogy, particularly violin, has not changed much in hundreds of years. Shock writes in her thesis, *Violin Pedagogy through Time: The Treatises of Leopold Mozart, Carl Flesch, and Ivan Galamian*, that although there were slight changes in pedagogy due to the development of the instrument since Mozart's time, most of the set-up of the beginning violin student has remained the same and continues in current pedagogical practice. For instance, all three historical pedagogues, chosen to represent violin instruction in three different centuries, advocated placing the violin on the shoulder and keeping the scroll of the instrument parallel to the floor (47). Flesch and Galamian, who taught that the left thumb should be opposite the index finger, differed from Mozart's advice to rest the thumb on the neck of the violin, mainly because the thumb in Mozart's time was also used to support the instrument, as chin rests and shoulder rests were not used in Mozart's time (Shock 50-51).

Clive Brown, in his article "Physical Parameters of 19th and Early 20th-century Violin Playing", gives a very detailed examination of the differences between the German and French violin playing schools from the middle of the 18th century and through the 20th century. Although he shows some dramatic differences, particularly in how the left arm and stance changed, once the changes were embraced during the early 19th century, most of the changes have been subtle and due to the development of the instrument and the changing demands of the articulation of the bow due to the challenging music being composed, particularly by Paganini (Brown).

Importance of Proper Set-Up in Beginning Strings Students

For a teacher of beginning strings students, the most important aspect of the work is to make sure that the student has a good set-up by the end of their one or two year beginning period. In Susan Kempter's book *How Muscles Learn: Teaching the Violin with the Body in Mind*, she emphasizes the importance of teaching correct set-up when she states

The physical set-up of the student consumes early lessons. . . . For the first year or two, most of each lesson is devoted to these issues. As the body learns, postures and positions become more automatic, and more and more lesson time can be devoted to traditional music teaching, including phrasing, interpretation and music literacy. . . . Even when it takes longer than four years, it is time well-spent. We can, after all, have students who play with grace and ease, or students who play awkwardly and/or with maladaptive movement patterns. The outcome is often in the hands of the teachers. (Kempter 8-9)

Textbooks for pre-service strings teachers also direct attention to this critical period in strings instruction. In the book *Strategies for Teaching Strings: Building a Successful String and Orchestra Program*, authors Donald L. Hamann and Robert Gillespie stress

The beginning and second-year string classes lay the foundation for all future playing. The skills taught need to be carefully presented and reinforced so that the need for remedial instruction in future years is limited. Much time must be spent reviewing previously introduced skills so that good posture, instrument and left-hand positions, bowing skill habits, and a high standard of intonation can be firmly established. These foundational skills must become so well established that they become habits. Careful attention to each aspect of students' playing skills in these early classes, reinforced with

much review, gives students a solid basis for developing more advanced playing and listening skills in later classes. (Hamann and Gillespie 31)

In another textbook intended for pre-service strings teachers, *Guide to Teaching Strings*, Norman Lamb reminds the reader that violinists and violists have a more difficult time with set-up as playing positions for these instruments are awkward, while cellists and bassist have the advantage of having the floor as a means of support, but highlights the importance of teacher's role:

A quick perusal of some of the miserable positions that can be found among intermediate and some advanced players is ample evidence of the need to maintain constant vigilance during the early stages of the learning process. Constant attention and prodding by the teacher will be needed during the first year of instruction if acceptable results are to be achieved in this all important area of instrument and bow position. (Lamb 53)

And Phyllis Young reminds the reader of *Playing the String Game: Strategies for Teaching Cello and Strings* that when teaching cello students (as well as the other instruments), the faults due to an improper set-up may not be visible until the student moves to a more advanced stage (Young and Blakemore, ix).

Ramifications of Incorrect Set-Up

The message to teachers of beginning strings students is clear - make sure you set up your students properly. But what are the ramifications of not insisting on a good set-up? Why must we take precious class time to ensure that our students have impeccable set-up before we allow them to move on to the next stage? Christopher Selby and Scott Rush, in *Habits of a Successful Orchestra Director: Helpful Tips and Practical Strategies for Improving String Instruction*, summarize by stating

Position problems restrict movement and create tension, which can lead to injury as well as problems with vibrato, shifting, fine-tuning, velocity, articulation, and tone production. . . . Each time you teach a new skill, you have an opportunity to begin by assessing and reviewing basic technique, to make sure there are no problems that might inhibit the learning of more advanced skills. Fundamental skills are not "kids stuff" - they are important for string musicians of all ages. (Selby and Rush 48)

Angela Harman, whose book *The True Beginning: Before the Method Book* advocates a Suzuki rote approach for the first 6 weeks of lessons, declares that the first few weeks of class are the most important in the future success of her students, because this is the time when both good and bad habits are established. Harman writes “I always tell my students that if they hold the bow and instrument incorrectly, they are setting a 'quit-date' for the near future... they will be unable to play any advanced technique” (Harman Forward).

Norman Lamb, in his efficiently clear language, concisely lays out the problems:

Common Faults in Holding the Violin

The violin is held too far to the left or right. Either extreme causes problems for the bow and the left arm.

The angle of the violin is too flat. This makes the bow arm raise excessively to reach the G string and puts the head and neck in a strained position.

The violin is tilted at too much of an angle. This puts the E string at a difficult angle for the bow and repudiates the assistance that gravity lends to the bow.

The violin is held too high or too low. Both positions are detrimental to good bowing, shifting, and to appearance.

The arm is held too far to the left. This puts the fingers in an unsatisfactory position and causes problems in shifting.

The violin is held in the crotch of the hand. This impedes good fingering and makes for excessive motion in the shifting process.

The wrist is bent inward so that the palm of the hand is in contact with the neck. This is a common and extremely bad position since it precludes correct finger action and later on makes shifting nearly impossible.

The wrist is bent outward. This position strains the wrist and arm muscles and is in no way helpful. (Lamb 82)

In *The Teaching of Action in String Playing: Developmental and Remedial Techniques; Violin and Viola*, Paul Rolland gives a possible reason as to the perplexing and recurring problem of the flat wrist (sometimes called the “pancake” wrist) which is the bane of string teachers everywhere. Rolland explains:

Beginners automatically choose the most comfortable but professionally unacceptable holding position: the neck resting on the palm and the fingers placed flat on the string. . . . This universal but violinistically poor approach stems from the instinct of holding objects between the palm, thumb, and fingers and from the sensitivity of the extreme fingertips. It is a natural tendency to touch and feel with the flesh ball of the finger, not with the sensitive fingertips near the fingernail. The reluctance of beginners to place the fingertips in a correct but uncomfortable position causes the following faults:

1. Collapsing the wrist toward the player.
2. Bending the wrist sideways, with the hand leaning to the right.
3. Squeezing the neck between the thumb and first finger.

4. Tucking the hand under the neck.

5. Pressing the finger toward the bridge. (Rolland, Hellebrandt, and Mutschler 98)

Rolland equates a good violin hold with not only the left hand tasks, but with bowing as well: “The patience and perseverance required in teaching the correct hold are well worth the effort in the long run, as the instrument placement affects not only shifting and vibrato, but also bowing. Without the correct hold, it is difficult or impossible to develop good bowing habits” (Rolland, Hellebrandt, and Mutschler 61).

Not only are posture and position important in setting up a student for success, but relaxation and the freedom to move the body while playing was the focus of the works by the famous pedagogues Yehudi Menuhin, Ivan Galamian, and the aforementioned Paul Rolland. Ivan Galamian in his classic *Principles of Violin Playing & Teaching*, states “The relationship of the instrument to the body, arms, and hands has to be one that will allow a comfortable and efficient execution of all playing movements. This is, in the last analysis, the main criterion for the "rightness" of any bodily attitude or any muscular action in connection with violin playing” (Galamian, Thomas, and Chase 12).

As good posture, position, bow hold are merely the foundation to good strings technique, Yehudi Menuhin in his book and film series *Violin: Six Lessons with Yehudi Menuhin* reminds the teacher and player of the ultimate goal of the work of setting this foundation:

There is no fixed or immovable point of support for the instrument, nor is there any - except for those parts of the feet touching and balancing on the floor - for the violinist himself. The violin must become one with the fluid movement of the whole person, responding visibly to the undulant flow, to the swing, pendulum or circle, never blocking this flow at any of the joints of the body or at any of the points of contact with the violin

and bow, and directing it into the very last muscle and finger joint, which must be trained to move in all directions and to control while in motion, as the violinist himself must respond visibly to that inner surge which is born of the music itself and of his thoughts and feelings about it. (Menuhin 13)

Expectations of a “Good” Set-Up

Before further discussion of how Teaching Aids are used to help establish a good set-up or remediate a poor one, it is necessary to describe the expectations of a good set-up.

Posture

Most of the literature reviewed described how to set up a student’s posture. Hamann and Gillespie describe posture set-up for all string instruments. Their recommendations are within the universally accepted expectations for a good set-up.

Violin and Viola

Stand with feet shoulder width apart. Turn the left foot to the ten o'clock position and step out one or two inches. Lean slightly on the left foot. The instrument or shoulder rest should settle on the “shelf” (the triangle formed by the left shoulder, collarbone and side of the neck). The scroll of the instrument scroll should be parallel to the floor and positioned over the left foot. The head should be turned slightly to the left so that the side of the jaw settles in the chin rest. The nose should be pointed in the direction of the scroll. There should be a straight line between the tops of the head and the bottom of their spine. When playing sitting down, the set-up is the same, but the feet need to be flat on the floor and positioned out of the way of the path of the bow on the right side (Hamann and Gillespie 37-39).

Cello

Sit on the front of the chair. Legs are spread apart enough to accommodate the width of the cello. Feet are flat on the floor, positioned underneath the knees. The thighs should be parallel to the floor. [Note that some of the literature reviewed differed here, suggesting that the thighs should be pointing slightly downward.] The height of the chair needs to accommodate the above position. The cello should lean slightly to the left and rest on the upper torso of the player. [Note that many teachers expand on this, suggesting that the top of the upper bout rests on the sternum, near the heart.] The C string peg should be near the player's head and behind the left ear. There should be space between the neck of the cello and the top of the player's shoulder. The bottom of the cello is held between the knees, which are just below the "C" bout. The endpin should be adjusted so it takes up the difference and rests on the floor. The knees should gently balance the cello, with the instrument supported mainly by the body and endpin. [Note that many teachers also add that the instrument should be slanted enough so it is comfortable for the student.] (Hamann and Gillespie 39-40)

String Bass

Standing position: Stand with both feet flat on the floor and spaced far enough to accommodate the width of the bass. Adjust the length of the endpin so that the nut of the bass is near the top of the forehead. Place the endpin in front of the left foot, about one arm's length away. The left foot is slightly forward. Bring the instrument to the body, rotating the bass slightly to the right. Lean the bass toward the body with the upper bout resting against the left side of the stomach. The right back edge of the bass rests on the left groin. The inside of the left knee touches the back of the bass. The floor and the groin balance the instrument. The bass rests

against the abdomen at an angle. The pitch A on the G string should align at eye level over the left shoulder (Hamann and Gillespie 42-43).

Sitting position: Stand with both feet flat on the floor and spaced far enough to accommodate the width of the bass. Adjust the length of the endpin so that the nut of the bass is near the top of the forehead. Place the endpin in front of the left foot, about one arm's length away. Sit on the front half of a tall stool. The left foot rests on a rung of the stool, the right foot is flat on the floor with a slight bend at the knee. The knees are wide enough to accommodate the bass. Bring the basses back to the body.. The bass should be rotated slightly to the right and leaning against the left side of the stomach. The instrument should lean into the center of the body, resting on the left thigh. There should be space between the player's neck and shoulder and the neck of the instrument. The head should be able to move his head from side to side without touching the instrument neck (Hamann and Gillespie 40-41).

Left Wrist and Hand/Finger Shape

Much of the literature reviewed describes how to set up a student's left hand on the violin, but Selby and Rush describe left hand set-up for all string instruments. Their recommendations are within the universally accepted expectations for a good set-up, although there are some slight differences as to how high to set the base of the left hand - mostly to accommodate the differences in hand size, and the position of the thumb for cello and bass.

Violin/Viola

After setting the instrument in good position on the shoulder, bring the left arm up, with a relaxed, neutral wrist. The first finger rests against the neck of the instrument near the nut at the end of the fingerboard. The "joint line", where the first finger meets the palm of the hand, should touch the neck. The thumb rests on the other side of the neck.. The thumb tip should be almost

even with the fingerboard. [Other teachers expand on this by suggesting the tip be slightly above the fingerboard. There is much pedagogical discussion on the initial placement of the thumb and how it changes during playing. That discussion is beyond the scope of this thesis topic.] The thumb is across from where the first finger tip will touch the string. There should be space under the neck between the thumb and first finger. [Selby and Rush, along with Suzuki specialists describe this space as a “mouse hole” with room for a little mouse to run through. Others call it the “valley” at the bottom of the “V” of the hand, stating that the neck of the instrument should never rest in the valley or “web” between the thumb and first finger.] The thumb, wrist, and forearm should be aligned as the student rests the thumb on the neck. The hand should be soft and the wrist straight. Turn the left hand to bring the pinky closer to the neck. Place the thumb-side corner tips of the fingers on the string. The fingers should be shaped like a square. The fingers should curve. When not touching the string they should stay curved and hover over the string. They should not stick up in the air (Selby and Rush 60).

Cello/Bass

Place the instrument in correct playing position - do not lean the instrument to the left to watch the left hand. With the left hand create a relaxed C-shape formed by the thumb and index finger. [The other fingers continue the shape. The thumb should naturally be across from the second finger, or between the first and second finger. Selby and Rush suggest the shape of holding a grapefruit, other teachers recommend the shape of holding a large mug or fast food drink.] Selby and Rush suggest to rest the finger pads on the string so the two middle fingers are perpendicular to the string. For cello, the first finger points slightly toward the nose and the pinky points slightly down the fingerboard. For bass, the first finger rests around eye level and the other fingers stay loosely together for support. If the first finger note is not at eye level, adjust

the endpin. For both instruments, relax the shoulder and allow the weight of the arm to sink the fingers into the string. The shoulder should not be raised. The elbow should be positioned at a height to keep the wrist in relaxed. The corner tip of the thumb should be placed on the back of the neck opposite the second finger. [Selby and Rush suggest the thumb should be behind the D string, other teachers maintain that the thumb position changes depending on the string played. Again, this pedagogical discussion is beyond the scope of this thesis.] The thumb should maintain its C-shape. It should not point toward the scroll (Selby and Rush 63-64).

Right Hand Bow Hold

The bow hold is one where there are some differences, but Ivan Galamian describes the universal overall goal “The *correct* bow grip must be a comfortable one; all fingers are curved in a natural, relaxed way; no single joint (knuckle) is stiffened; and the correctly resulting flexibility must allow all of the natural springs in the fingers and the hand to function easily and well” (Galamian 47). The descriptions of the bow hold for all string instruments as indicated by Hamann and Gillespie are in keeping with most of the literature that was read. Hamann and Gillespie describes the bow hold for each instrument:

Violin/Viola

- The index finger rests on top of the bow stick near the second knuckle joint.
- The second finger is curved across from the thumb, is draped over the side of the bow, and touches the stick near the second knuckle joint.
- The third finger drapes over the side of the bow, and the fingerprint touches the concave side of the frog.
- The little finger is curved and its tip rests near the inner side of the bow stick.
- The thumb is across from the second finger forming an oval shape.

- The hand leans slightly on the index finger. (Hamann and Gillespie 53-54)

Cello

- All fingers are relaxed, slightly curved, and draped over the side of the frog and bow stick.
- The index finger is draped over the bow stick near the first or second knuckle joints.
- The second finger rests near the ferrule of the bow. The third finger is near the U cutout of the frog.
- The fourth finger is near the eyelet of the bow.
- The thumb is curved, and the side of its tip rests across from the second finger.
- The hand is more perpendicular to the bow stick than upper strings [referring to violin and viola]. (Hamann and Gillespie 54-55)

Bass

- French Bow . . . The shape of the hand is similar to the cello bow hand, but the fingers are positioned slightly more over the side of the frog. . . .
- German Bow . . . All fingers are naturally curved. The index finger and thumb form a circle. The second and third fingers are curved and positioned near the index finger. The fourth finger is located under the frog for support. (Hamann and Gillespie 55)

Straight Bowing

The action of the bow being drawn is the primary way sound is produced on a string instrument. Advanced bowing techniques will require the bow to articulate the sound in many different and complex ways, from simple legato détaché bowing to the gymnastics of ricochet.

The bow hold (or grip) and the ability to execute the bowing techniques are inextricably linked.

Norman Lamb describes this partnership

This grip must be relaxed but firm. It must be capable of manipulating the bow with the utmost delicacy at one moment and with fierce roughness the next, with snail-like slowness and tremendous speed. It must be able to make short staccato notes and then connect notes imperceptibly, to stay on the string or bounce off, to be at the frog or at the point, or on the top string or the lowest string all in fractions of seconds. (Lamb 66)

Ivan Galamian speaks to the fundamental necessity of straight bowing

The straight bow stroke from frog to tip is the foundation of the entire bowing technique.

The bow has to be drawn in a straight line, parallel to the bridge, for two good reasons.

One is that a crooked bow stroke causes the bow to change promiscuously its place of contact on the string and to vary at random its distance from the bridge. The second reason is that a crooked bow stroke impairs the quality of the sound. (Galamian 51)

The Use of Teaching Aids

The use of teaching aids to help develop, remediate or maintain set-up may be a modern trend, although it is very possible there are examples in primary source material that are in original languages or not readily available. For instance, Brown describes a teaching aid described by Camilla Urso, who took lessons at the Paris Conservatory in the 1850s. Brown quotes the book by Charles Barnard, *Camilla: A Tale of a Violin. Being the Artist Life of Camilla Urso* (Boston, 1874), p. 40., in which Mme. Urso describes learning the lesson of correct stance the hard way. To learn to put the weight of her body more on the left leg than the right, her teacher made her place her right foot in a teacup. Apparently many teacups were broken before Mme. Urso mastered the stance (Brown).

In the classic treatises I read of Yehudi Menuhin, Ivan Galamian and the books that I read that are not used in my source material because they are for teachers of advanced students, such as *Eleven Books of Studies for the Violin* by Demetrius Constantine Dounis and *The Various Styles of Bowing* and *The Secret of Acquiring a Beautiful Tone* by August Leopold Sasse, there are no examples of the use of teaching aids, with the exception of Menuhin, who suggests the use of a “light wooden stick” instead of the bow when first developing the bow grip (Menuhin 32). The use of the stick, and in the more modern texts, the expansion of the idea to use a pencil or dowel rod to prepare the bow hand prior to placing it on the frog of the bow seems to be a universal technique of modern pedagogy designed for teachers in a school setting. Rolland’s classic text includes the use of the pencil or dowel, and also includes the use of the cardboard roll (such as a toilet paper, or paper towel roll) to isolate the elbow movement from the shoulder (Rolland, Hellebrandt, and Mutschler 81), a technique that has also been adopted by modern texts for pre-service teachers and school method books, such as *Essential Elements for Strings*.

The more modern books describe additional teaching aids such as:

Left Hand Teaching Aids

- Angela Harman suggests the use of a small ball or object to help the student understand the “v” in the hand and leaving space for the “v” below the neck . She advises the student to place the ball between the thumb and left hand with the “v” space below and try to balance the ball without squeezing (Harman 30-31).
- To help students understand the curve of the fingers above the string and the left elbow action when changing strings, Susan Kempter recommends putting a roll of Life Saver candies, or for smaller hands, using a Tootsie Roll in the curled fingers of the left hand.

She then instructs the students to "center" the candy roll over each string by moving the elbow appropriately (Kempter 36).

- To develop strength and independence in the fingers, Kempter suggests placing small objects on the floor or a table for the students to pick up using the thumb and a single finger, keeping the finger "round and soft" and then drop the objects into a dish. Picking up objects with the thumb and each finger helps to develop the musculature of the hands. She also recommends picking up a tissue using a thumb finger combination and passing it around the circle of students. The idea to to be sure that the student practice these movements using the thumb and all the finger combinations (Kempter 45).
- To help ensure that the left arm, wrist, hand, finger position and instrument are all lined up, Selby and Rush suggest a Teaching Aid for violin and viola students. With the fingers placed on the string, place a Skittles [or M&M] candy on the middle segment of the first finger. "If the instrument, arm, wrist, hand, and finger position are all correct, the middle segment should be parallel to the floor and the Skittles will sit atop the finger segment like it is on top of a little table" (Selby and Rush 62).
- Another way to ensure a that the violin or viola student uses appropriate posture and that the instrument is at the correct angle was proposed by Paul Rolland. He suggests that once the instrument is in playing position, place a small rubber ball between the G and D string on the violin (or C and A on the viola) near the bridge. The student must keep the instrument at the proper angle in order to balance the ball on the strings (Rolland, Hellebrandt and Mutschler 71).
- Susan Kempter recommends using 2 pencils rubber banded on each side of the left hand and wrist to help the student understand how to play with a straight wrist. The wrist has

flexibility to move up and down, but sideways is cumbersome. This teaching aid can also be used for the bow hand (Kempter 64).

Right Hand Teaching Aids

In addition to the pencil teaching aid, there are other objects that were recommended in the literature I read. As well, some of the ideas mentioned came from Laurie Niles blog Violinist.com. In her blog article *Teaching with Pedagogical Props from Your Local Store - ASTA 2015*, she reviews a session at the 2015 American String Teachers Association conference presented by William Wassum. His lecture, "Fun Pedagogical Props from Your Local Shopping Mart for the String Classroom". "Students often understand simple explanations or demonstrations, but not always. When the situation calls for a little more imagination to get the point across, 'sometimes a prop is a useful thing,' Wassum said." (Niles) Among the ideas that came out of this article were:

- To help the student understand the right arm elbow movement when bowing, "flip an egg carton upside-down, have the student hold it like a violin, and then the student can "bow" through the grooves to get that straight-bow feel" (Niles).
- "Stick a straw into the violin's f-hole to keep the bow from sliding out too far on the fingerboard. In fact, you can stick the other end into the other f-hole, to create an improvised Bow Right device" (Niles). This was also recommended by Hamann and Gillespie to help the student how to bow straight and between the bridge and fingerboard (Hamann and Gillespie 61).
- "To keep students from back-swinging their bow arms, hook an over-sized rubber band around the scroll, then hook the other end around the frog, so that when they bow, it pulls their arm forward" (Niles).

- “Wrap a rubber band around the frog to either hold fingers down or to provide a tackier surface on which to place the pinkie” (Niles).
- “Corn pads can be stuck to the bow to show a student where certain fingers go.”

Hamann and Gillespie also recommended the use of straws to develop a relaxed bow grip. They recommend the students form the bow grip on the straw and then practice bowing movements, trying not to squeeze and misshape the straw (Hamann and Gillespie 56). Along with method books I have seen, such as *Essential Elements for Strings*, Hamann and Gillespie recommend having violin, viola, cello and bass player students hold rosin where the bridge would be and practice bowing while rosining their bow. (Hamann and Gillespie 60). And for cello students only, they have a game called *Traveling Down the Road*, to help the student understand the motion of the right arm and forearm:

Have each student hold the end of a yardstick, dowel, or PVC tube in front of him at the height where their strings would be when the instrument is in playing position. Then have them place their bow hand shape around the object and slide their hand back and forth along the stick. As they are moving their hand, check to see if the motion is in two steps. In Step 1, the motion with the hand moving away from the body is first initiated by the upper arm, followed by an opening of the forearm. In Step 2, when the hand is moving toward the body, the elbow should close first, followed by the upper arm. (Hamann and Gillespie 61)

There were considerably more teaching aids in the texts and articles for the violin and viola than the cello and bass. (With the exception of Phyllis Young and Sally Blakemore’s book of games for cello teachers *Playing the String Game: Strategies for Teaching Cello and Strings*, although most games used mental imagery instead of physical objects as teaching aids.) Perhaps

this reason for the focus on teaching aids for the violinist and violist is because of the unnatural way of holding the instrument and the unconscious need for the body to be comfortable. It will be interesting to see if the data from the survey confirms this idea.

Chapter 3

Study Findings Part 1 - Methodology

The Study Questions

This study was intended to answer my questions regarding whether teachers are using teaching aids with beginning strings students, and if so, what aids are being used and are they considered effective? If teachers are not using teaching aids, what are the reasons? Are the teaching aids too expensive or too time consuming to make? Is the amount of time in a class period a factor? Does the size of the group taught matter as to whether a teaching aids are used or not? Does the experience level of the teacher determine the desire to use teaching aids? To answer these questions, I began to develop a survey that would be distributed to teachers of beginning strings students. (See Appendix B: Survey of Strings Teachers for a complete list of survey questions and answers).

The Survey Questions

First, I developed a series of demographic questions, designed to find out about the environment in which the respondents taught. I asked:

1. **Do you teach beginning strings students?** (If the respondent answered “No”, they were thanked for participating and the survey ended.)
2. **How long have you taught beginning strings?** This question was designed to determine whether the teacher was beginning as a strings teacher (“1-3 years”), an experienced teacher of strings (“11+ years”) or a teacher gaining experience on strings (“4-7 years” or “7-10 years”).
3. **Where do you teach your beginning strings students?** This question was designed to be used later during analysis of the data to determine whether the type

of school a teacher worked in was a factor in whether or not they used teaching aids. The question allowed teachers to choose any of the options that applied “Private Studio”, “Afterschool Program”, “Public School”, “Charter School”, “Private School” or “Other”.

4. **What environment do you teach your beginning strings in?** This question was also included to be used later during analysis of the data to determine whether the number of students taught at a time was a factor as to whether or not teachers used teaching aids. The options were “Lessons”, “Ensemble Class” or “Lessons and Ensemble Class”.
5. **How many students at a time do you typically teach when giving beginning strings lessons?** The responses to this question were intended to be used later during analysis of the data give an indication of how many students a teacher was using a teaching aid with at a time. The responses ranged from private student (“1”) to shared lessons (“2-3” students), small group (“6-8”), group (“9-12”), large group (“13-19”), very large groups or sections (“20-39”) or full ensembles (“40+”) students.
6. **How old is your beginning strings student?** This final demographic question was expected to be used during data analysis to determine the approximate level of fine motor skills acquisition for the group of students. The options were “6 or younger”, “7-9” (fine motor skills in these groups are generally not as developed and I expected that teaching aids would be used more with these groups than with older ones), “10-13”, “14-17”, “18 and older”, and “Various ages”.

Questions 3-6 were questions I would have like to have asked for each of the 4 main areas described below (“Set-Up Areas”), but I realized that it would make an already long survey even longer, so I opted to ask for this information in the more generalized demographics area.

I decided to focus on the physical set-up of the beginning strings student, looking at the four key areas of critical importance in setting up a student to play with good posture, position and bowing: maintaining a straight left wrist, developing left hand finger shape that would encourage good intonation, developing an appropriate bow grip and the ability to bow straight (parallel to the strings). For each of these four areas, I researched commercially available teaching aids as well as aids that I had personally used, or had heard about from other teachers.

The four areas (“Set-Up Areas”) were represented in four distinct sections of the survey:

- Left Hand Wrist Aids
- Left Hand Fingering Aids
- Right Hand Bow Hold Aids
- Right Hand Straight Bowing Aids

Although the teaching aids listed for each section were different, the questions asked in each section were the same. The only exception is the question in each section asking the respondent’s main reason for using the teaching aid. The responses in this question reflected common problems in that area.

For the purposes of describing the questions for each section of the survey and avoiding the need to repeat most of the questions for each of the four sections, please substitute the appropriate placeholder (see table 1, below) to refer to the language to insert in the **placeholder** designated in brackets (ie, **[Set-Up Issue]**):

Table 1

Survey Area Placeholders

Table 1. Survey Area Placeholders		
Type of Teaching Aid	Set-Up Area	Set-Up Issue
Left Hand Wrist Aids	Left Hand Wrist Position	Left Wrist
Left Hand Fingering Aids	Left Hand Fingering	Fingering
Right Hand Bow Hold Aids	Right Hand Bow Hold	Bow Hold
Right Hand Straight Bowing Aids	Right Hand Straight Bowing	Straight Bowing

All sections of the survey began with the yes/no question “Do you use teaching aids to develop or correct the **[Set-Up Area]**.”

If the respondent chose “no”, they were asked the question “What is the primary reason you do not use **[Type of Teaching Aid]**?” Respondents were given the following choices “Too expensive”, “Not enough time to make homemade aids”, “Setting up students to use the aid takes too much class time”, “Do not think they are effective”, “Unaware of aids used for this purpose” and “Other”. If the respondent chose “Other”, they were given the opportunity to give a short answer reason that was not on the list. After answering this question, the survey moved to the next main Set-Up Area.

When I tested the survey before releasing it, it became clear that some respondents didn’t realize that many of the teaching aids they indeed used were actually part of the survey. For instance, the few teachers I used as testers didn’t realize that fingering tapes or stickers were part of “Left Hand Fingering” and would answer “no” even though they actually did use teaching aids for that Set-Up Area. To avoid this situation, at the beginning of each section, I inserted an image containing a listing of the commercial and homemade teaching aids known to me. The image was clearly visible to the user on the screen that included the initial question for each set-up area. By making this modification and adding a visual cue, the teachers had a clearer idea of

what aids I was indicating and the problem of the unwanted “no” was reduced considerably. (see figure 1, below).

Figure 1

Left Hand Fingerings Aids

Left Hand Fingering Aids:

Commercial:

- Finger Tape
- Mark! Set! Go! Fingerboard Tapes
- First Frets Position Indicator
- Don't Fret Position Indicator
- Fiddle Fingerboard Fret Guide
- FingerMaps Sticker Labels

Homemade:

- Stickers for fingerboard
- Finger tape
- Corn pads for thumb
- Velcro on neck for thumb
- Other

If the respondent answered “yes” they were asked to respond to the following questions:

1. What teaching aids to you use with beginning strings students to develop or correct the [Set-Up Area]? A list of commercially available and homemade teaching aids were listed, including an option for “Other”. Respondents could choose as many as were applicable.

2. If you chose "other" to list a homemade [Type of Teaching Aid], please describe the device and how it is used. The "Other" question was one I hoped would be chosen by many respondents, as the data in that field and this one would be used to build a catalog describing inventive solutions to the set-up problems. I hoped to share this catalog with the strings teacher community as part of this thesis project.

3. In what environment do your beginning strings students use these aids? The answers were "Individual or Small Group Lessons", "Ensemble Classes" or "Both". I expected to use the data from this field along with the information gained in demographic questions #4 and #5 in order to ascertain the environment the teaching aids were used in.

4. When do you typically begin using aids to support the [Set-Up Issue]? The options were "From onset of teaching the setup", "When needed for remediation" or "Other" (which allowed a short answer).

5. How long does a typical student use the [Type of Teaching Aid]? This question was intended to discover whether the aid was a quick fix or used for the entire time a student is usually classified as a "beginner", which is typically years 1 and 2 of instruction, though it can go longer, depending upon the frequency of instruction. The options were "1-2 lessons", "3-5 lessons", "6-9 lessons", "10+ lessons", "Year 1" and "Year 1 and 2".

6. How does the typical student use [Type of Teaching Aid]? This question was designed to indicate whether teaching aids for this set-up area were used with teacher intervention or more student-centered. The options were "With teacher guidance", "With peer tutoring", "At school (self-managed)" and "At home (self-managed)". Respondents could check multiple options.

7. How effective do you feel these aids are in developing the desired [Set-Up Area]? This question, coupled with the data from the environment questions, would be helpful in establishing a possible reason why a teaching aid might or might not be considered effective. The answer was on a scale of 1-5, with 1 designating “Not Effective” and 5 designating “Very Effective.”

8. What are your main reasons for using [Type of Teaching Aid]? The options for this question were different in each of the four Set-Up Areas due to the differences in the set-up problems. They will be discussed individually later on in this chapter.

9. What instruments do you use [Type of Teaching Aid] for? The options were “Violin/Viola”, “Cello” and “Bass”.

10. If you use different [Type of Teaching Aid] for specific instruments or situations, please describe:”. This short answer question was designed to clarify if certain aids were used for only certain instruments. This was necessary as the survey didn’t gather data for each and every teaching aid used - only the teaching aids for the particular Set-Up Area in the section.

Once the survey was tested and the test data analyzed to be certain that the survey was generating data and charted results that would be usable, it was ready to be released.

The Data Pool

My intention was to not only gather information to answer the study questions, but also to develop a catalog of teaching aids that would be made publicly available to the respondents as well as the general string teacher community and for research purposes. In order to ensure that I had a highly qualified and targeted data pool, I was very selective about who I invited to take the survey. I approached the president of WCSMA (Westchester County School Music Association), the primary organization of public school music teachers in Westchester County, NY, and asked

for permission to invite the members of the organization who self-identified as “Strings Teachers” on their profiles. I was granted permission and on October 22, 2017 sent out an email inviting those 153 teachers to take the survey. (See Appendix C - Survey Invitation.) I also desired a broader range of teachers who identified as strings teachers, including those who taught privately or taught in private, parochial or charter schools, so I approached the administrator of the Facebook social media group “School Orchestra and Strings Teachers”. This is a “secret” group, (defined by Facebook as a group where “only members can find the group and see posts”). As the only way to belong to this group was by invitation by another member of the group”, I expected that the chances for unqualified users would be very low. I was given approval to share my survey with the 5994 members worldwide at the time. The administrator posted the invitation, which was identical to the one mentioned previously. The survey was open for these two groups of participants beginning October 22, 2016. Most of the survey takers completed the survey by October 25, 2016, though there were a few more added through 10/28/2016, with one additional response on 11/14/2016. Of the 159 responses to the survey, all were valid and usable. No data had to be removed due to inappropriate content or unqualified respondents, which I believe was due to the highly targeted data pool. Unfortunately, due to a problem with either Google Forms or specific users submitting their responses multiple times, I discovered that three records were duplicates even though they had a different date-time stamp, and one record was duplicated eight times, all with different date-time stamps. The problem of duplicates did not come to light until after my first round of data analysis. I used a Google app to identify the duplicates and subsequently removed the duplicate records from both the Google Form and manually from the spreadsheet (for some reason, Google Forms does not alter the

spreadsheet once it has been created, even if there are deletes. Once I was confident that I had only unique records in the form and spreadsheet, I proceeded to analyze the 148 responses.

Study Findings Part 2 - Data Analysis

For ease of reference, this analysis is divided into five sections - Teacher Demographics, Left Hand Wrist Teaching Aids, Left Hand Fingering Teaching Aids, Right Hand Bow Hold Teaching Aids, and Right Hand Straight Bowing Teaching Aids. Please see Appendix D: Survey Results for charts referred to in this chapter.

Teacher Demographics

Question 1 - Do you teach beginning strings students? Of the 148 respondents, 145 (98.1%) responded “Yes” to the question “Do you teach beginning strings students?” The three respondents (2%) who responded “No” were reminded that the survey was intended for teachers of beginning strings students (see appendix D, figure D.1). They were thanked and the survey ended for those respondents. All further results discussed in this chapter are generated from the responses of the 145 remaining respondents.

Question 2 - How long have you taught beginning strings? Over half of the pool (eighty-four respondents, or 57.9%), reported they were experienced teachers with eleven or more years of teaching beginning strings. The next largest group with seventeen respondents (twenty percent) indicated they have taught between four and seven years. Fifteen teachers (10.3%) indicated they were beginning teachers (one to three years) and seventeen (11.7%) reported they have taught for seven to ten years (see appendix D, figure D.2). I was surprised that the number of experienced teachers was so high. It might have been better to have had another

category for master teachers of twenty years or more experience so that comparing data with years of teaching might make it easier to see trends.

Question 3 - Where do you teach your beginning strings students? (check all that apply, if “other”, please describe) The majority of the respondents (125 respondents, 86.2%) reported they taught beginning strings in a public school setting. A little over a third (fifty-one respondents, 35.2%) reported they taught in a private studio. Eleven respondents (7.6%) indicated they taught in an afterschool or Saturday program, and the same number indicated they taught in a private school. Two respondents (1.4%) taught in a charter school. One respondent (.7%) taught in a university class for beginners and another taught in an enterprise school. Some respondents reported more than one setting, as expected, which is the reason the number of respondents total more than 148 and more than 100% (see appendix D, figure D.3). The large proportion of teachers who taught in public school was not unexpected. As typically public schools can be underfunded, it is possible that there may be some creative solutions that will come from this demographic group.

Question 4 - What environment do you teach your beginning strings students in? Slightly over half of the pool (seventy-nine respondents, 54.5%) reported they taught beginning strings in an Ensemble class only setting, eleven (7.6%) taught in lessons only and fifty-five teachers (37.9%) responded that they taught beginners in both lessons and ensemble class (see appendix D, figure D.4). I had not expected that the majority would teach only in ensemble class. This may be reflective of the actual situation of strings teachers or it is possible that there was a misunderstanding of terminology. My expectation was that “Ensemble class” would be defined as an orchestra class setting with many students, lessons would include single students as well as

small groups. As these terms were not defined in the survey, teachers responded according to their own interpretation of these terms.

Question 5 - How many students at a time do you typically teach when giving beginning string lessons? The largest group of respondents (forty-one or 28.3%) indicated they taught 20-39 beginning strings students at a time. The next largest group (32 respondents or 22.1%) taught 13-19 students at a time. Twenty-one respondents (14.5%) taught only 2-5 students at a time, followed sixteen respondents (11%) who taught forty or more students at a time. Fifteen teachers (10.3%) reported teaching 6-8 students at a time, twelve (8.3%) taught 9-12 students at a time and eight (5.5%) taught only 1 student at a time (see appendix D, figure D.4). This answer surprised me. I had assumed that most schools would have lesson groups averaging twelve or fewer students, but only 38.6% of teachers reported teaching groups of this size. The majority of respondents (61.4%), reported giving beginning strings lessons with thirteen or more students in a lesson group. This is consistent with the results of Question 4 above. Teaching large numbers of students at one has a huge impact on the amount of personal attention a teacher can give a beginning strings student. Although I predicted that teachers of large groups would not use teaching aids, the lack of time for individual attention could it very attractive for teachers to use teaching aids, provided that they are cheap enough to purchase or make and easy to implement.

Question 6 - How old is your typical beginnings strings student? Eighty-five respondents (58.6%) reported that they taught beginning strings students ten to thirteen years old, which corresponds to Grades 5-8 in the U.S. and slightly over one third (forty-seven respondents or 32.4%) taught students seven to nine years old, which corresponds to Grades 2-4. Six respondents (4.1%) taught various ages, three respondents (2.1%) taught students ages fourteen

through seventeen and another three respondents (2.1%) taught ages six or younger. One respondent (.7%) taught students eighteen years or older (see appendix D, figure D.6). Although the majority of teachers (91%) taught students in elementary and middle school, I had anticipated that more respondents would have reported teaching elementary school students than middle school students, but I may not have accounted for the fact that Gr 5 students, normally ten years old, could be in either elementary or middle school, depending upon the district.

Left Hand Straight Wrist Teaching Aids

Question 7 - Do you use teaching aids to develop or correct the LEFT HAND WRIST POSITION? The majority of the respondents (120 or 82.8%) reported that they did not use teaching aids to develop or correct the left hand straight wrist position. Only twenty-five respondents (17.2%) indicated that they used teaching aids for this purpose (see appendix D, figure D.7). This was consistent with my expectations, although I was not expecting quite as large a gap between users and non-users of teaching aids.

Question 8 - What is the primary reason you do not use LEFT HAND WRIST aids? (if “other”, please describe) Of the 120 respondents who indicated they did not use teaching aids to develop or remediate the straight left wrist, thirty-three (27.5%) indicated that setting up the students to use the aids took too much class time and thirty-two (26.7%) responded that they did not consider the teaching aids to be effective. Ten respondents (8.3%) indicated that there was not enough time to make the homemade aids, eleven (9.2%) indicated they were unaware of aids used for this purpose and six (5%) stated the aids were too expensive. The responses from respondents who chose “Other” included some common themes: eight respondents indicated that they didn’t need aids if they set up their students with good position or posture; seven teachers used imagery or verbal reminders instead of aids; two respondents indicated that they used

monitoring and reinforcement instead of aids; one respondent indicated they used effective teaching, but did not elaborate; six teachers indicated that teaching aids were not necessary; one teacher said they were aware of the aids, but didn't use them for all the reasons listed in the survey options, one respondent indicated they had used teaching aids in the past but didn't find them effective; one indicated no time and one taught only cello and did not think the question was applicable (see appendix D, figure D.8).

Question 9 - What teaching aids do you use with beginning strings students to develop or correct the LEFT HAND WRIST POSITION? (Check all that apply) Of the twenty-five respondents who used teaching aids for the left wrist, none of them used the commercial products. Five respondents (20%) used a marshmallow taped to the neck of the instrument or the student's wrist and five respondents (20%) used the thumbtack taped to the neck of the instrument. I was astonished to find out that teachers actually used the thumbtack trick! One respondent (4%) used the straw taped to the thumb button (see appendix D, figure D.9). Seventeen of the respondents (60%) reported other solutions, which are included in appendix D, figure D.10 and discussed below.

Question 10 - If you chose "other" to list a homemade LEFT HAND WRIST aid, please describe the device and how it is used. The use of homemade teaching aids by the seventeen respondents who indicated they used "other" devices including the following common themes: seven respondents used an object in the palm such as a pom-pom or small toy to prevent the hand from touching the neck; five respondents used a tactile object such as Velcro or moleskin to mark the thumb position; one teacher indicated they use an object next to the thumb to reduce squeezing; three used an object attached to the neck of the instrument as a tactile alert

when the wrist approached “pancake” position; and one respondent created a homemade wrist brace (see appendix D, figure D.10).

Question 11 - In what environment do your beginning students use these aids? Of the twenty-five respondents who used teaching aids for the left wrist, fifteen respondents (60%) used these aids with large groups of students. Six respondents (24%) used them with individual or small group lessons and four respondents (16%) used them in individual or small group lessons as well as ensemble classes (see appendix D, figure D.11).

Question 12 - When do you typically begin using aids to support the LEFT WRIST? (If “other”, please describe) Teaching aids for the straight left wrist were used primarily when needed for remediation, as reported by eighteen respondents (72% of those respondents who indicated they used teaching aids). Five respondents (20%) indicated they used the teaching aids from the onset of teaching the set-up. The two remaining respondents (8%) who entered “Other” both wrote that they use the teaching aids from both the onset of teaching the setup well as for remediation (see appendix D, figure D.12).

Question 13 - How long does a typical student use LEFT HAND WRIST aids? The left hand straight wrist teaching aid was primarily used for a short period of time. Eight respondents (32%) used the teaching aid for three to five lessons and seven respondents (28%) said they used the teaching aids for only one or two lessons, with a combined total of 60% of respondents using left wrist teaching aids for five or fewer lessons. Three respondents (12%) indicated they used the teaching aid for six to nine lessons and four respondents (16%) said they used the teaching aids for ten or more lessons. Three respondents (twelve percent) reported that they use the teaching aids for the first year of strings study. No respondents said they used them in both Year 1 and 2 (see appendix D, Figure D.13). The use of the left hand straight wrist

teaching aid for only a few lessons was an expected result, as it mirrors my experience with using teaching aids for this purpose and noticing a sharp decline in effectiveness after a few lessons.

Question 14 - How does the typical student use LEFT HAND WRIST aids? (Check all that apply) This question allowed the respondent to check multiple options, so the total percentages are over 100%. The majority of the teachers used the left hand wrist aids with both teacher guidance and at school (self-managed): twenty-two respondents (88%) used the aid with teacher guidance and twenty-one respondents (84%) reported the aids self-managed by the student at school. This implies that the teacher teaches the student how to use the teaching aid (and if there is something to attach to the instrument, likely sets that up for the student). Once the teaching aid is modeled and taught, the student uses the device for self-monitoring. Fifteen teachers (60%) indicated the teaching aid was self-managed by the student at home. Only seven teachers (28%) said they use peer tutoring with the teaching aid (see appendix D, figure D.14).

Question 15 - How effective do you feel these aids are in developing the desired LEFT WRIST POSITION? For this question, survey takers were asked to rate effectiveness on a scale from one to five, with one indicating “Not effective” and five indicating “Very effective.” For the purposes of discussion for this question and when it is repeated for the other three set-up areas, consider two to indicate “Somewhat effective”, three to indicate “Effective” and four to indicate “More than effective”. The majority of teachers who used left hand teaching aids to develop a straight wrist felt that the use of the teaching aids was effective (five respondents, 20%) or more than effective (eighteen, or 72%). Only one teacher (4%) felt they were less than effective and one (4%) indicated the left wrist teaching aids were very effective. No respondents indicated that the teaching aids they used were not effective (see appendix D, figure D.15).

Question 16 - What are your main reasons for using LEFT HAND WRIST aids?

(check all that apply, if “other”, please describe) This survey question allowed the respondent to choose multiple options, so the total percentage is over 100%. Twenty-one respondents (84%) that use teaching aids for the left write reported that beginning strings students find it difficult to maintain the correct position without correction. Nine respondents (36%) indicated that there was not enough class time to give attention to correcting the left wrist manually and eleven respondents (44%) indicated that there were too many students to correct manually. Six respondents (24% total) each reported another reason, including teaching aids give the students a mechanism to provide a self-check, places students in a “Can’t Fail” environment where the teacher can “Set it and forget it!” and gives the students something concrete they can understand and do themselves. Teachers also reported using the teaching aids because it gives some students the feeling of space needed or that some students need a tactile aid, and that most students have poor fine motor skills (see appendix D, figure D.16). The implication is that left wrist teaching aid is actually a “teacher’s” aid, acting as a substitute for teacher intervention and giving the students tactile feedback to help them self-correct a common problem.

Question 17 - What instruments do you use LEFT HAND WRIST aids for? (Check

all that apply) This question allowed the user to check multiple options. As expected, all twenty-five teachers (100%) who use teaching aids to develop a straight left wrist provided the teaching aids for their violin and viola students, for whom developing a straight wrist is traditional issue. Eleven respondents (44%) used teaching aids with their cello students, for whom a straight wrist in line with the elbow is also a pedagogical problem. Eight respondents (32%) used the teaching aids with their students who play bass (see appendix D, figure D.17).

Question 18 - If you use different LEFT HAND WRIST aids for specific instruments or situations, please describe. One respondent indicated that they used the aids for struggling violin students. The other four respondents who answered this question discussed the use of the teaching aids for lower strings: two respondents reported that they use water bottles or asked the student to imagine holding a can of soda to develop the shape of the left hand and thumb placement; another respondent indicated they use the corn pad, Velcro or tape on the back of the neck as a tactile reminder for the placement of the left thumb; and one respondent uses “pet mouse”, though it was not clear whether the “mouse” was imaginary or if there was an actual teaching aid (see appendix D, figure D.18).

Left Hand Fingering Teaching Aids

Question 19 - Do you use teaching aids to develop or correct LEFT HAND FINGER POSITIONS? Only one respondent (0.7%) did not use teaching aids to develop or correct left hand finger positions. The rest of the 144 respondents (99.3%) did use teaching aids for this purpose (see appendix D, figure D.19). I was expecting many of the teachers to report that they used some type of teaching aid to help with finger positions or intonation, but I was not expecting that all would use them. I had expected that some of the teachers would not use them as some teachers believe that relying on fingering tapes can delay developing the ear.

Question 20 - What is the primary reason you do not use LEFT HAND FINGERING aids? The one respondent who reported they did not use the teaching aids indicated they were not effective (see appendix D, figure D.20). This was less than I expected. The respondent who did not use teaching aids was an experienced teacher (11+ years) in a public school and taught a large ensemble of 20-39 beginning strings students, who were between 10

and 13 years old. I would have thought that someone with a large group would choose to use fingering aids with beginners, so this was unexpected.

Question 21 - What teaching aids do you use with beginning strings students to develop or correct LEFT HAND FINGERING? (check all that you use, if “other”, please give a descriptive name) Because the respondents were allowed to choose multiple teaching aids, the percentages will not equal 100%. The majority of respondents (111 or 71.1%) used homemade finger tapes made from masking tape, car detailing tape, etc. materials to create finger tapes. Twenty-eight respondents (19.4%) used the commercial product Finger Tape for the same purpose. Other commercial products were not as well used: seven respondents (4.9%) used Mark! Set! Go! Fingerboard Tape; four respondents (2.8%) used First Frets Position Indicator and another four respondents (2.8%) used Don’t Fret Position Indicator. None of the respondents used the other commercial products Fiddle Fingerboard Fret Guide or FingerMaps Sticker Labels. Thirty-four respondents (23.6%) used their own stickers to mark positions. Teaching aids for marking thumb positions were reported by forty-two respondents (29.2%) who used corn pads and another twenty-eight respondents (19.4%) preferred using Velcro to mark the thumb position (see appendix D, figure D.21). Twenty-two of the respondents (15.3%) reported other solutions, which are included in appendix D, figure D.22 and discussed below.

Question 22. If you chose “other” to list a homemade fingering aid, please describe the device and how it is used. Because the respondents were allowed to choose multiple teaching aids, I have used bold face to designate a teaching aid that was entered using “Other”. Some of the comments from Question 22 relate back to the listed teaching aids as well as their other response. (Note that clarity, I have combined the responses for “Other” from Question 21 with the respective comments from the respondents in Question 22. Some common themes in the

responses were: twelve respondents used a teaching aid other than Corn Pads or Velcro to mark the position of the thumb on the neck. Four respondents used flat, fuzzy or foam stickers (flat, fuzzy and foam) while three respondents used moleskin. Other solutions were dots, felt, auto pin striping, circle reinforcements, a circle shaped Band-Aid, and a penny taped to the cello or bass. Three teachers used alternatives for finger tapes for marking notes on the fingerboard, including skinny Washi tape, quarter inch colored draftsman tape, and thinly sliced bumper stickers. One respondent used White-Out to place dots on the side of the fingerboard for the bass players. One teacher used color-coded dots for notes and one created a pencil line on the fingerboard. Two respondents used teaching aids for the left hand. One drew a “Magic X” with marker on the inside of the left finger near the base for hand placement. Another used a pen to make smiley faces on the finger pads [cello/bass] or tips [violin/viola]. One teacher used “feet pads” but was not clear as to how they were used (see appendix D, figure D-22). This question generated some innovative and clever solutions to problems with left finger placement for intonation and thumb placement, such as moleskin, White-Out, “Magic X”, Washi tape and others.

Question 23 - In what environment do your beginning students use these aids?

Seventy respondents (48.6%) indicated that they used the left hand fingering teaching aids in an ensemble class environment. While only seventeen respondents (11.8%) used the teaching aids in individual or small group lessons, fifty-seven respondents (39.6%) used the teaching aids in all situations, showing that the majority of the teachers who responded to this question (127 respondents, or 88.2%) indicated that they used the fingering aids with large groups of students (see appendix D, figure D.23). This response was expected as fingering aids typically have sticky backs and can be applied to the instruments once and the tapes or stickers remain on the

instrument for an extended period of time, which varies depending upon the stickiness of the material. Teachers can apply the tapes at the beginning of the year and then “set it and forget it”.

Question 24 - When do you typically begin using FINGERING aids? (if “other”, please describe) The majority of respondents (134 or 93.1%) used the teaching aids from the onset of teaching the setup. Only six respondents (4.2%) used them only when needed for remediation. Four respondents (2.7%) described other timelines for the use of the aids: two respondents indicated that they start with tapes or dots and add foam or corn pads if needed for remediation; one respondent reported they used the finger markers from the onset of teaching the left hand, but removed the aids when they were worn out or moved up a size; and one respondent indicated they used both from onset and for remediation, but it depended on the student’s needs (see appendix D, figure D.24).

Question 25 - How long does a typical student use FINGERING aids? The majority of the respondents (104 or 72.2%) used left hand fingering aids for the first two years of strings study. Thirty-one respondents (21.5%) used the aids for only the first year of strings study. Six respondents (4.2%) used the aids for ten or more lessons, while one respondent each (.7%) used the aids only for one to two, three to five or six to nine lessons (see appendix D, figure D.25). I had expected that the majority would use them the first year, but was very surprised by the data showing that the majority of teachers use them for both years. This was interesting to me as discussion by colleagues in the past seemed to favor only using the fingering markers until they started wearing off, or taking them off once the students were comfortable finding the notes with their fingers so that there would not be delay in developing the ear. It was very interesting that the self-reporting of teachers in a survey situation showed what is probably a more realistic

representation of the use of these aids, particularly in large group instruction, as reported by the majority of the teachers in this study who use fingering aids.

Question 26 - How does the typical student use FINGERING aids? (check all that apply) This question allowed respondents to check as many boxes as appropriate for their situation, so the percentages are over 100%. The majority of respondents indicated that that most of the students use this fingering aid with teacher guidance (130 respondents, or 90.3%), self-managed at school (110 respondents, or 76.4%), and at self-managed at home (115 respondents (or 79.9%). Forty-eight respondents (33.3%) used fingering aids in a peer tutoring situation (see appendix D, figure D.26). It is likely that the reason that students use this aid both at school and at home, is that once the aid has been applied, it stays on the instrument, and is used as a guide for training where to place the fingers in order to sound a specific pitch. This is a fundamental skill in string playing and the beginning step in training the ear.

Question 27 - How effective do you feel these aids are in developing the desired FINGERING POSITIONS AND INTONATION? The majority of respondents (93%) reported that the fingering aids were effective to very effective in developing the desired fingering positions and intonation: eighteen respondents (12.5%) indicated the aids were effective, sixty-five respondents (45.1%) indicated the aids were more than effective and sixty respondents (41.7%) indicated the aids were very effective. One respondent (.7%) indicated the aids were somewhat effective (see appendix D, figure D.27). This high perception of effectiveness is not a surprising result as it is reflective of the high use of fingering aids, with 99.4% of respondents indicating they use the aids.

Question 28 - What are the main reasons you use FINGER aids? (check all that apply, if “other”, please describe) This question allowed respondents to select more than one

option and enter additional reasons for use the teaching aids, so the percentage total will be over 100%. The majority of respondents (108, or 75%) indicated that beginning strings students find it difficult to maintain the correct fingering position by themselves. Eighty-five respondents (58.3%) felt that there were too many students to correct manually and seventy-one respondents (49.3%) indicated that there is not enough class time to correct the left wrist manually. Twenty-five of the respondents (17.4%) entered additional reasons. Many of the teachers who entered comments for “other” included more than one reason beyond the options listed in the survey as to why they use the fingering aid. Common themes that were reported were: eight respondents reported that fingering aids helped to develop the hand frame, muscle memory, and or fine motor skills; six respondents stated that fingering aids were important for the students’ ability to self correct either at home or at school; five respondents reported that fingering aids develop intonation or helps play in tune from the beginning; seven reported fingering aids functioned as a visual aid for the students; one reported it is also a visual aid for the teacher; one reported the need for a tactile aid for some students; two respondents noted that help beginning strings students as they manage the acquisition of multiple skills; one respondent reported they remove most of the tapes as the students start to develop the ear, but leave on the third finger tape as a marker for learning where to place the first finger in third position; one teacher reported that students are growing and fingering aids help as a constant marker for finger placement; and one teacher reported that fingering aids are simply practical (see appendix D, figure D.28).

Question 29 - What instruments do you use FINGERING aids for? (check all that apply) This question allowed respondents to check all that apply, so the percentage totals will be over 100%. The data show that almost all respondents used fingering aids with all four string instruments: violin and viola (143 respondents, or 99.3%), cello (139 respondents, or 96.5%) and

bass (135 respondents, or 93.8%) (see appendix D, figure D.29). Although the question of what string instruments are taught was not asked in the demographics section of this survey, it is likely that the number of respondents who reported using the aids with bass is slightly lower because not all strings teachers teach bass in their schools, as many schools wait until middle school or high school to start bass.

Question 30 - If you use different FINGERING aids for specific instruments or situations, please describe The respondents who included information about how they used fingering aids differently for different instruments gave very detailed information, but there were some common themes: six respondents reported using corn pads or moleskin as markers for the position of the thumb, particularly for cello and bass; four respondents gave detailed information about how they use color in the fingering aid, such as to mark the difference between violins and violas, to highlight notes that students are struggling with, or to mark positions for the bass (see appendix D, figure D.30 for all responses to this survey question).

Right Hand Bow Hold Teaching Aids

Question 31 - Do you use teaching aids to develop or correct RIGHT HAND BOW HOLD? The majority of survey takers (115 respondents or 79.3%) used teaching aids to develop or correct the right hand bow hold. Thirty respondents (20.7%) did not use teaching aids for this purpose (see appendix D, figure D.31). Although I had expected there to be many who use teaching aids for this purpose, I was not expecting such a large number of respondents to indicate they use teaching aids. But after my research, I realized that most of the method books include the idea of using a pencil as a teaching aid to prepare the bow hold, and research into historic practice also recommended using a pencil or stick, so the level of use as shown in the survey is possibly a reflection of that.

Question 32 - What is the primary reason you do not use RIGHT HAND BOW

HOLD aids? (if “other”, please describe) Of the thirty respondents (20.7%) who did not use teaching aids to develop the bow hold, eleven respondents (36.7%) indicated that they did not think it was effective. Five respondents (16.7%) reported there was not enough time to make homemade aids, four respondents (13.3%) stated that setting up the aid takes too much class time, two respondents (6.7%) indicated that the teaching aids were too expensive, and one respondent (3.3%) was unaware of teaching aids to develop the bow hold. Seven respondents (23.3%) gave other responses: two respondents stated that the aids were unnecessary, one said that they prefer to teach and reinforce for ninety percent of students and similarly, another respondent indicated that they only use the aids if there is a problem. One respondent preferred to use verbal cues and symbolism so students could learn to self-correct. Another felt that if the skill was taught in incremental steps, it was not necessary to use a crutch. One respondent indicated that other techniques were used, but did not clarify (see appendix D, figure D.32).

Question 33 - What teaching aids do you use with beginning strings students to develop or correct the BOW HOLD? (check all that you use, if “other”, please give a descriptive name) This survey question allowed multiple choices, so the percentages will total over 100%. There were a great many commercial products in this category, as well as a number of survey-supplied homemade bow hold teaching aids. The majority of respondents (91 or 79.1%) used the pencil to help develop the bow hold. This was not surprising, as most of the method books in use in schools today advocate the use of the pencil to prepare the bow hold. Almost forty percent of teachers used either corn cushions (forty-one respondents, 35.7%) or bow “tattoos” (thirty-nine respondents, 33.9%) as a teaching aid to help the student know where to place the pinky (primarily for violin and viola students). Homemade pinky nests (a more

three-dimensional version of the corn cushion) was used by twenty-four respondents (20.9%). As the placement of the pinky is one of the more difficult things for violin and viola students to master, I was not surprised that so many teachers used them, even though these three versions of the teaching aid take time to implement or prepare (pinky nests and bow tattoos, or are expensive (corn cushions) if you have a lot of students.) Thirty-two respondents (27.8%) used the dowel rod to prepare the bow hold and eighteen respondents (15.7%) used PVC pipe for the same purpose as the dowel rod. I was not surprised by the lower numbers of use for dowel rod and PVC pipe, as it can require an investment, particularly if you have many students using them at once. The Things 4 Strings “Bow Buddies” were used by a greater number of respondents than I anticipated, as these products are prohibitively expensive (costing approximately \$30 each): fourteen respondents (12.2%) used the Frog and twelve respondents (10.4%) used the Hold Fish, which are designed to work together to develop the violin and viola bow hold, and sixteen respondents (13.9%) used the Cellophant for the cello bow hold. Thirty-five teachers (30.4%) indicated that they use other teaching aids, which will be discussed with the responses from survey Question 34 below. Most of the teachers reported using at least two different bow hold teaching aids. Only twenty-three teachers indicated they used only one teaching aid for the bow hold, and the majority used a pencil or something similar to prepare the bow hold. Many respondents used three or more different teaching aids for the bow hold, or as one respondent put it “whatever it takes” (see appendix D, figure D.33).

Question 34 - If you chose “other” to list a homemade BOW HOLD aid, please describe the device and how it is used. There were many creative homemade options listed as “other” teaching aids. Teachers reported these in both the “other” section of Question 33, as well as in the response to Question 34, so the results added in as short answers by the respondents for

both questions are indicated in this discussion. Eight respondents reported using a straw to form the bow hold as it would bend under tension. One of the eight respondents indicated they used dried spaghetti for the same purpose, as the spaghetti would break under tension. (A light and relaxed bow hold is required in order to achieve a beautiful tone.) Five teachers had alternatives to pencils for preparing the bow hold without the bow: one teacher used wooden skewers for violin and viola students as the skewer could fit under the fingernail, mimicking good position on top of the bow. Four respondents created “training bows” by cutting down decommissioned bows to just beyond the frog and removing the hair. This allows students to practice the bow hold without the extra weight and unwieldy balance of the bow. Thumb, finger, and pinky positions were marked by stickers or auto tape as reported by two respondents, and four respondents used more tactile moleskin, adhesive felt, silicone fingertips or pencil grips for the same purpose. A pencil grip was also used to create a homemade pinky nest by one respondent and three others reported using a rubber band to create the same thing. One respondent described a pinky nest for cello made out of rubbing tubing. Rubber bands were also used by one respondent to create a nest for the ring finger (to keep it off the top of the frog) and two teachers reported using rubber bands to create “safety belts” to ensure all fingers touched the frog. One teacher reported using “Elastomer”, which is another name for rubber, but didn’t clarify how it was used. Another teacher indicated they created special grips for their special education students, but did not give a description of the grip or the materials used. Two teachers also used songs or games to teach the bow hold. One teacher added another commercial product, the “Fedget Bow Hold Guide”, which I was not aware of when setting up the survey. One teacher mentioned another commercial product, the BowMate, which had been mistakenly assigned to the Straight Bowing section of the survey. One teacher indicated “Strips at the balance point”,

but did not clarify, so it was not clear if they used the strips to indicated finger/thumb position at the balance point (many method books have students form bow holds at the balance point of the bow after they have mastered the pencil hold, as an interim step before trying to form the bow hold at the frog (see appendix D, figure D.34). Four teachers indicated paper towel rolls, paint rollers or Pringles cans as alternatives to PVC pipe for cello or bass players, although these were actually intended to be in the straight bowing teaching aids section as the information was repeated in that section. The sheer amount of bow hold solutions, both commercial and homemade, used by the teachers is an indication of the scope of the problem intrinsic to getting a beginning strings player to understand how to form a proper bow hold.

Question 35 - In what environment do your beginning students use BOW HOLD aids?

Most of the respondents used teaching aids for the bow hold in Ensemble Classes (fifty-five respondents, or 47.8%) or in both Ensemble and Small Group Lessons (forty-four respondents, or 38.3%). Only sixteen respondents (13.9%) used the bow hold aids only in individual or small group lessons (see appendix D, figure D.35). This result surprised me at first as my experience with bow hold aids are that the homemade ones are somewhat time consuming to implement unless the students are putting the devices in place on their own. But as I reflected on the variety of bow hold aids and noted that the preparatory step before using the bow is to form the bow hold on a pencil or PVC pipe, I could make sense out of the results.

Question 36 - When do you typically begin using BOW HOLD aids? (if “other”, please describe) When considering that the preliminary step in learning to use the bow is to form the bow hold away from the bow, it makes sense that the majority of teachers (seventy-nine respondents, or 68.7%) would indicate that they begin using the bow hold aids from the onset of teaching the set-up. Twenty-four respondents (20.9%) indicated they used the teaching aids only

when needed for remediation. Twelve respondents (10.4%) chose to enter information other than the two options supplied by the survey: Five respondents reported they use teaching aids for the bow hold both from the onset of teaching the set-up as well as for remediation. Four respondents indicated as above, but further clarified which aid was used at the onset and which aid was used for remediation. Two indicated that bow hold teaching aids are used with students with special needs (either physical or learning disabilities) and one teacher indicated they used the teaching aids before using the bow, perhaps not understanding the survey's use of "onset of teaching the setup" for a specific part of the setup (see appendix D, figure D.36).

Q37 - How long does a typical student use BOW HOLD aids? The responses indicated that teachers were divided on whether bow hold teaching aids were needed for a relatively short period of time, or a longer period. Of the respondents that indicated they used them for a short period of time, twenty-seven respondents (23.5%) used them for three to five lessons, and twenty-three respondents (20%) used them for six to nine lessons. Only eleven (9.6%) respondents indicated that bow hold aids were used for only one or two lessons, indicating that bow hold aids are not a quick fix. More lesson time was needed as reported by teachers who used the aids for ten or more lessons (twenty-two respondents, or 19.1%), and even more substantial amounts of time was indicated by twenty-four respondents (20.9%), who indicated they used the teaching aids for the entire first year. Only eight respondents (7%) used the bow hold teaching aids for the first two years (see appendix D, figure D.37). I believe the spread of numbers was fairly equal (except for the outliers) due to the fact that so many respondents used the teaching aids at the onset, which could be loosely described as ten weeks or less and a smaller amount of respondents used the teaching aids only for remediation, as reported in Question 36. Perhaps the data could have been clearer if I had separated out bow hold aids

used to prepare the bow hold (pencils, PVC pipe, dowel rods, games and songs) from the others and surveyed for this teaching aid separately.

Question 38 - How does the typical student use BOW HOLD aids? (check all that apply) This survey question allowed respondents to check multiple options, so the percentages will total over 100%. With the exception of peer tutoring, in which only twenty-nine respondents (25.2%) reported using, the majority of teachers used all three other learning situations: 110 respondents (95.7%) used the teaching aids with teacher guidance, eighty teachers (69.6%) indicated that students used the aids self-managed at home, and seventy-eight (67.8%) indicated that students used the aids self-managed at school (see appendix D, figure D.38). I believe that these large percentages are due to the sheer variety of types of bow hold aids, some used to prepare the bow hold before using the bow and others for use with the actual bow.

Question 39 - How effective do you feel these aids are in developing the desired BOW HOLD? The majority of respondents who used teaching aids to develop or remediate the bow hold indicated that the teaching aids were effective: fifty-six respondents (48.7%) indicated the aids were more than effective, thirty-seven respondents (32.2%) indicated the aids were very effective and twenty respondents (17.4%) indicated they were effective. Only two respondents (1.7%) thought the aids were somewhat effective (see appendix D, figure D.39). I was not surprised with these numbers, as the bow hold is the one set-up area in which teaching aids are described in most method books. But as the method books only indicate using teaching aids for preparing the bow hold off of the bow, these effectiveness ratings might have been different if I had separated out the teaching aids used to prepare the bow with those used on the bow itself.

Question 40 - What are the main reasons you use BOW HOLD aids? (check all that apply, if “other” please describe) This question allowed respondents to include more than one

option, so the percentage totals will be over 100%. The majority of respondents (ninety, or 78.3%) reported that they use teaching aids for the bow hold as students find it difficult to maintain the correct bow hold position on their own. Fifty-one teachers (44.3%) responded that they had too many students to correct manually and forty-seven respondents (40.9%) indicated that there were too many students in a class to correct the bow hold for each students. Twenty-five respondents (21.7%) also indicated other reasons for using teaching aids to develop or remediate the bow hold. Seven teachers stated that using a pencil or “training bows” helped to develop the bow hold because these devices are lighter than the heavier and oddly weighted bow. Two teachers mentioned the related hand tension that can develop when trying to develop a bow hold directly on the bow. Three teachers thought it was important to use to develop the bow hold before using an actual bow, though they were not clear about the reasons. One of the three said it gave the students a chance to begin to develop the bow hold while waiting for instruments in the beginning of the year. Two teachers mentioned that the teaching aids helped with hand or finger shape. Among the other reasons listed, two teachers seemed to be discussing straight bowing, and may not have realized that came under a different set-up area part of the survey, which they seemed to address in the straight bowing set-up area questions (see appendix D, figure D.40).

Question 41 - What instruments do you use BOW HOLD aids for? (check all that apply) As is consistent with the other set-up areas, the majority of respondents (111 respondents, or 96.5%) used bow hold teaching aids with their violin and viola students. Bow hold aids were used by one hundred respondents (87%) with students who play cello and eighty respondents (69.6%) with students who play bass (see appendix D, figure D.41). Although bow holds are slightly different for the instruments, the need for a relaxed bow hold with proper finger

placement is paramount in terms of producing a beautiful tone. The only reason that there may be differences is possibly not as many teachers teach bass or cello as teach violin and viola.

Question 42 - If you use different BOW HOLD aids for specific instruments or situations, please describe. Thirteen respondents (11.3%) added additional information as to how they use bow hold teaching aids differently for different instruments. Only one respondent discussed all students (“All students use PVC Pipe, use the pinky house for those that need it”). The other twelve all indicated that their comments were intended for use with cello and/or bass. One respondent was discussing straight bowing, which is in a different area of the survey. One respondent reported needing more ideas for bass and another stated that most of the bow hold aids are not relevant when teaching students how to use a German bow. (The German bow is held very differently than the French bow, which is similar to the bow used by cello, violin and viola players.) A number of the respondents discussed the Things 4 Strings “Bow Buddies” line of teaching aids (Frog, Fish and Cellophant): they reported using them primarily for remediation, and there were various opinions as to whether the Cellophant was a good tool. One teacher added another teaching aid when they mentioned using a cut down pool noodle to help the student form the round hand shape needed on the bow (see appendix D, figure D.42).

Right Hand Straight Bowing Teaching Aids

Question 43 - Do you use teaching aids to develop the ability to BOW STRAIGHT? Eighty-six respondents (59.3%) indicated they used teaching aids to develop the ability to bow straight. Fifty-nine respondents (40.7%) indicated they did not use teaching aids for this purpose (see appendix D, figure D.43). This result was the opposite of what I had expected as I had predicted that most teachers would not use the teaching aids for this purpose as the commercial

ones are very expensive and the homemade ones require time to implement or trust in the students to use them without damaging the instrument.

Question 44 - What is the primary reason you do not use STRAIGHT BOWING aids? (if “other”, please describe) Of the fifty-nine respondents (40.7%) who indicated they did not use teaching aids to develop the ability to bow straight, seventeen respondents (28.8%) said they did not think teaching aids for this purpose were effective. Nine respondents (15.3%) indicated setting up the aid took too much class time, and eight respondents (13.6%) said there was not enough time to make homemade aids. Seven respondents (11.9%) said they were too expensive, and four (6.8%) were unaware of these aids. The remaining fourteen respondents (23.6%) responded with other reasons: four respondents stated that teaching aids were not needed with effective teaching and two respondents restated reasons that had been listed in the question. The others gave examples of teaching techniques, such as putting the elbow against a wall, or using mirrors, that do not require objects as teaching aids (see appendix D, figure D.44).

Question 45 - What teaching aids do you use with beginning strings students to develop the ability to BOW STRAIGHT? (check all that you use, if “other”, please give a descriptive name) This survey question allowed respondents to include multiple options, so the percentage totals will be over 100%. Of the eighty-six respondents (59.3%) who use aids to teach beginning strings students to bow straight, sixty-nine (80.2%) used the technique of placing straws in the F-holes to create a bumper so the bow doesn’t stray over the fingerboard when playing the instrument. Six respondents (7%) used the commercial product “Bow-Right” which has a similar function, except that the student bows between two metal bumpers. The respondents did not use any of the other commercial products. One of the commercial products, BowMate, was misclassified and placed in this category, when it should have been placed in the

Left Hand Bow Hold list of teaching aids. Thirty-eight respondents (44.2%) used cardboard tubes as a way to practice straight bowing away from the instrument and twenty respondents (23.3%) used PVC pipe tubes for the same purpose. The other fourteen respondents (16.3%) used alternative techniques (see appendix D, figure D.45). The alternative techniques will be discussed in Question 46, below. I had expected that there would be a good percentage of teachers who used cardboard tubes to practice straight bowing away from the instrument, as this is one of the techniques that some of the method books suggest, but I was not expecting so many respondents to use the technique of placing straws in the F-holes, as that does have potential of damaging the instrument if not done carefully or, as I have learned from personal experience, the straws can sometimes fall into the instrument and a luthier may be required to remove the straw.

Question 46 - If you chose “other” to list a homemade STRAIGHT BOWING aid, please describe the device and how it is used. In Question 45, fourteen respondents (16.3%) indicated that they use other teaching aids to assist students to learn to bow straight, but many were alternative materials for the two main types of teaching aids and ten respondents included a description of how their teaching aid is used. Of the fourteen respondents who indicated they used other teaching aids to help the students develop straight bowing, four respondents used alternatives for the “Straws in the F Holes” teaching aid, listing pencils, dowel rods, pipe cleaners, and pool noodles (cut down to put in the F holes of cellos and basses). Rather than placing something in the F-hole, one respondent described a system of using a combination of rubber bands and a stick to move the ‘bumper’ to different strings. One respondent used paint rollers instead of cardboard tubes. Other types of solutions included three respondents who reported they used egg cartons turned upside down as “violins” for the students to bow in the grooves, giving the students the feeling of straight bowing away from the instrument. Two

respondents said they use tape -- one respondent reported placing it between the bridge and fingerboard (I assume under the strings), the other indicated they place tape between the F-holes. Two respondents indicated they do not use materials, but have students position their upper arm against a wall to feel the opening and closing of the elbow. One respondent reported using dowel rods on shoulder or leg so that cello and bass students can get the feel for bowing straight using their elbow (see appendix D, figure D.46).

Question 47 - In what environment do your beginning students use STRAIGHT BOWING aids? Forty respondents (46.5%) used aids to help students learn to bow straight in their ensemble classes. Twenty-one respondents (24.4%) used them in private lessons or small group lessons. Twenty-five respondents (29.1%) reported using them in both (see appendix D, figure D.47). These percentages surprised me, as I expected that more teachers would use in individual or small group lessons, as the commercial products are expensive and placing straws in the f holes can potentially harm the instrument if not done carefully. In my classroom of third grade students, I do not let students insert the straws themselves, so the idea that so many teachers used these tools with large groups was unexpected, although the number of teachers in this survey that teach beginning strings to middle school students may be a possible explanation.

Question 48 - When do you typically begin using STRAIGHT BOWING aids? (if “other”, please describe) Forty-eight respondents (55.8%) indicated they use the teaching aids when needed for remediation. Thirty-four respondents (39.5%) indicated they use teaching aids right from the onset of teaching students to bow straight. Four respondents (4.7%) gave alternative responses. Three of those respondents said they use teaching aids when beginning to teach straight bowing as well as when needed for remediation. One respondent said that they wait to use the teaching aids until the students have earned their “bow license” (they demonstrate

they can form a correct bow hold on a pencil or dowel rod, and have understood the concept of how to use their right arm) and can use more than one inch of bow (see appendix D, figure D.48).

Question 49 - How long does a typical student use STRAIGHT BOWING aids? The majority of respondents use the straight bowing teaching aids for a short period of time: fifteen respondents (17.4%) use them only for one or two lessons and thirty-three respondents (38.4%) use them for three to five lessons. Twelve respondents (14%) use them for a little longer - six to nine lessons. Fourteen respondents (16.3%) use them for ten or more lessons. Only a small percentage of respondents use them for a full year (eight respondents, 9.3%) and four respondents (4.7%) use them for one to two years (see appendix D, figure D.49). I was interested to note that when answering this question, most respondents indicated they use aids only for a relatively short time, but in Question 48, forty-eight percent of the teachers responded that they use straight bowing aids for remediation. The teachers seem to be indicating that even remediation for most students would only be needed within the first nine lessons from the onset of teaching the setup.

Question 50 - How does the typical student use STRAIGHT BOWING aids? (check all that apply) This survey question allowed respondents to choose more than one option, so the percentages will total over 100%. Most of the respondents (eighty-one, or 94.2%) indicated that the students use the straight bowing aids with teacher guidance. Forty-five respondents (52.3%) reported that the students use the aids at school without teacher guidance and forty-five respondents (52.3%) said that students use the aids at home. Only nineteen respondents (22.1%) indicated they use the teaching aids in a peer-tutoring situation (see appendix D, figure D.50). There is a large difference between the number of respondents who use the teaching aids with

guidance as opposed to self-managed. It is possible that the forty-five respondents who indicated students use the teaching aids self-managed might be referring to the teaching aids that students use away from the instrument, such as cardboard tubes and PVC pipe rather than teaching aids that are used on the instrument, such as straws in the F-holes, but the survey wasn't specific enough to get that level of detail.

Question 51 - How effective do you feel these aids are in developing the ability to BOW STRAIGHT? Almost all of the respondents felt the aids were effective. Twenty-four respondents (27.9%) said the teaching aids were effective, forty-four respondents (51.2%) indicated they were more than effective, and sixteen respondents (18.6%) thought the teaching aids were very effective. Only two respondents (2.3%) thought the teaching aids were somewhat effective and no respondents indicated they were not effective (see appendix D, figure D.51).

Question 52 - What are the main reasons you use STRAIGHT BOWING aids? (check all that apply, if "other", please describe) This question allowed respondents to select multiple options, so the total percentage will be over 100%. Sixty-seven respondents (77.9%) indicated they use the straight bowing teaching aids because beginning strings students find it difficult to bow straight. Thirty-seven respondents (43%) said that there wasn't enough class time to correct the bow angle for every student and forty-two respondents (48.8%) reported that they used the teaching aids because there were too many students to correct manually. Eight respondents (9.3%) indicated other reasons. One reported they used teaching aids after other methods without aids had been tried unsuccessfully by the students, one said to meet the needs of individual students and another indicated that it was very useful kinesthetic feedback for students who are blind or have fine motor difficulties. One felt they helped the students to understand bow placement and another felt they helped the students to understand the motion. One

respondent felt their students understood the concept more quickly when using the aids. One said that the straight bowing aids could be used as guides when the teacher wasn't there or when students work with each other. And one mentioned they use them because not bowing straight impacts sound (see appendix D, figure D.52).

Question 53 - What instruments do you use STRAIGHT BOWING aids for? (check all that apply) As I expected, the numbers here were not surprising - eighty-six (100%) of teachers used straight bowing teaching aids with their violin/viola students, sixty-one (72.9%) with their cello students and fifty-one (59.3%) with students who play bass (see appendix D, figure D.53). The only reason that there may be differences is possibly not as many teachers teach bass or cello as they do violin and viola.

Question 54 - If you use different STRAIGHT BOWING aids for specific instruments or situations, please describe: Three of the six respondents who included information in this question discussed differences with their responses as they pertained to cello and bass. One respondent said they use electrical tape instead of their rubber band and stick solution, one said that they use bowing through tubes for cello and bass as the other strategies listed did not apply to the lower strings, and one respondent desired more solutions for cello and bass. Of the other three responses, one explained that they use cardboard tubes first and then straws but didn't clarify if this was for a particular instrument. One respondent added an additional strategy that didn't involve a teaching aid, which was to place the bow on the bridge. The respondent didn't clarify in the survey how this applied to bowing, but I believe the respondent means that they have the students bow on the bridge so they can feel the correct angle of the bow for each string. And one respondent expressed the thought that having students bow without aids is helpful, although this response belies their original response saying they used

straight bowing teaching aids as well as giving a mostly effective rating for use of the teaching aids (see appendix D, figure D.54).

Question 55 - Email Address (optional) In this final option question, teachers were asked to provide their email address if they would be willing for me to contact them for further information or if they would like a copy of the catalog of teaching aids that would be the final product of this thesis research. Sixty-seven respondents included their email address.

Additional Analysis

Perceived Effectiveness of Teaching Aids Compared by Teaching Experience

One of the questions I had when I began this study was whether the number of years of teaching experience was a factor in whether a teacher used teaching aids and whether they perceived teaching aids to be effective. In order to get a well-rounded picture of the perceived effectiveness of teaching aids based on years of teaching experience, I analyzed all respondents who indicated they use a specific teaching aid, as well as respondents who do not use the aid because they did not think they were effective. This was possible because all respondents who reported they used teaching aids indicated some measure of effectiveness (between 2-5 on the linear scale). In the analyses below I have not included respondents who do not use a specific teaching aid and indicated a reason other than “Not effective”.

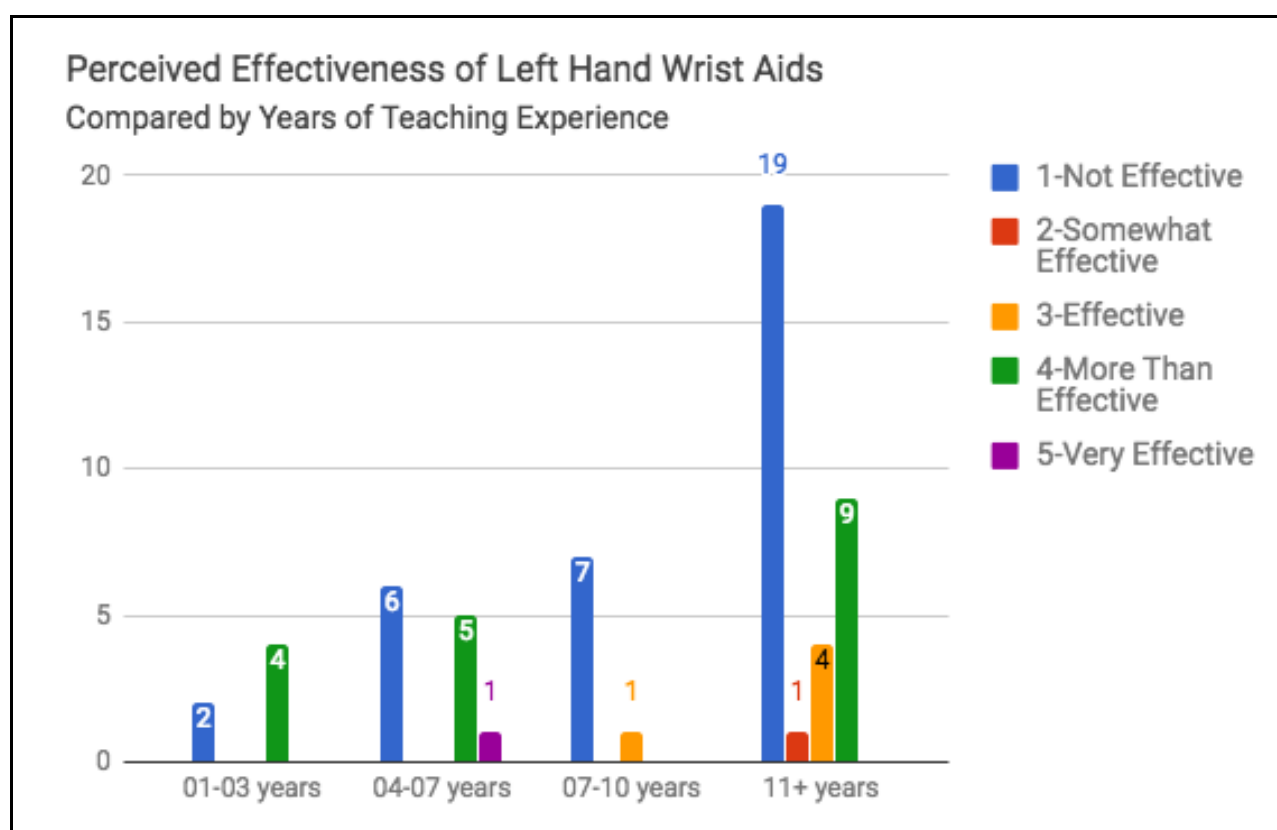
Left Hand Wrist Teaching Aids

The majority of respondents (82.8%) indicated they did not use teaching aids to develop or remediate the left hand straight wrist. That is reflected in Table 2, below, even though this chart only includes respondents who indicated a level of effectiveness (thirty-four non-users who indicated that they did not think the left hand wrist aids were effective as well as the twenty-five

users of left hand wrist teaching aids). The most experienced teachers (11+ years of teaching experience) indicated the largest numbers of both users and non-users of left wrist teaching aids. Note that 57.9% of all respondents in this survey were in this category of experience (see table 2, below).

Table 2

Comparison of Effectiveness of Left Hand Wrist Aids by Years of Teaching Experience



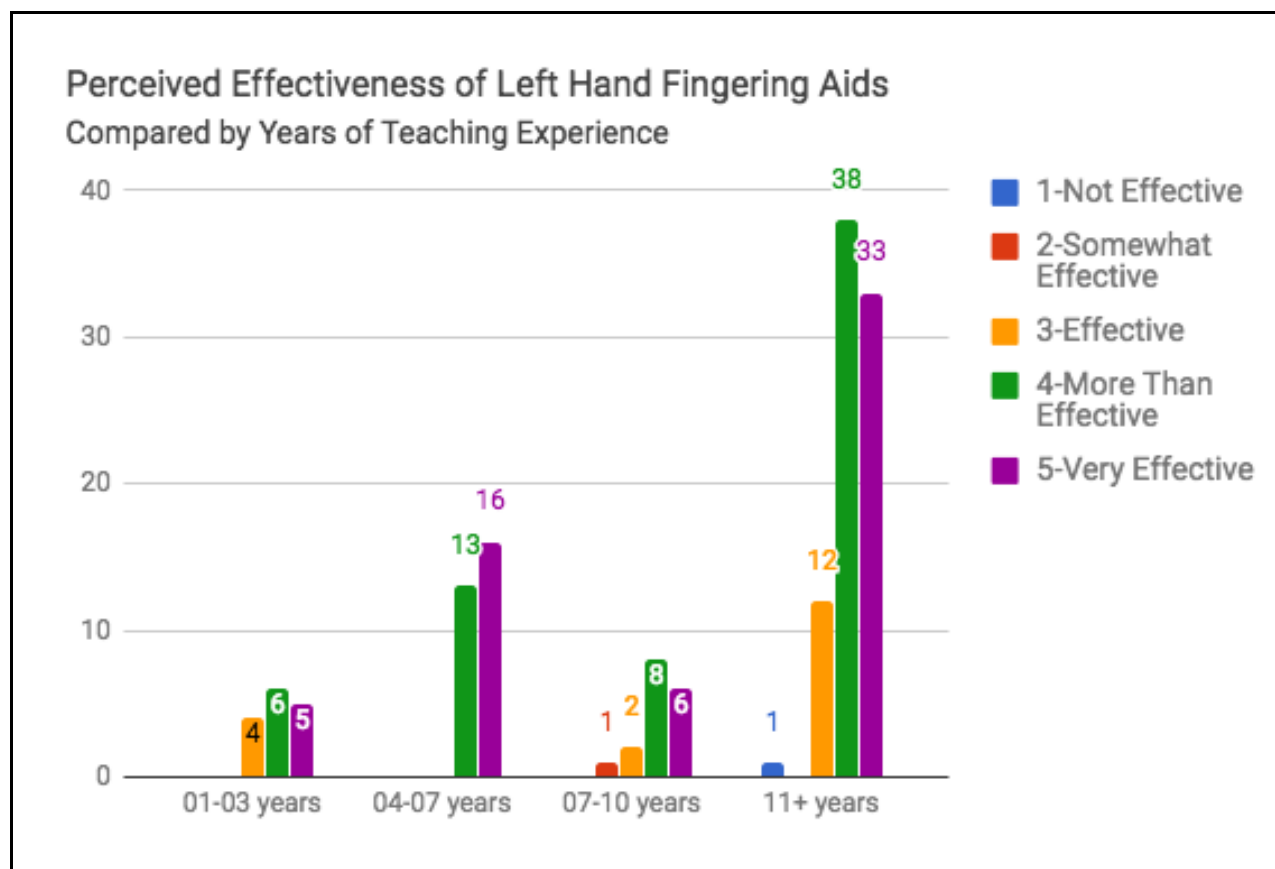
Left Hand Fingering Teaching Aids

There was only one respondent who did not use teaching aids to develop or remediate left hand fingering, so Table 3, below, includes all 145 respondents of the survey who taught beginning strings students. The experienced teachers (11+ years of teaching experience) seemed

to find these teaching aids effective, and they also were the largest group to find the left hand fingering aids more than effective and very effective (see table 3, below).

Table 3

Comparison of Effectiveness of Fingering Aids by Years of Teaching Experience

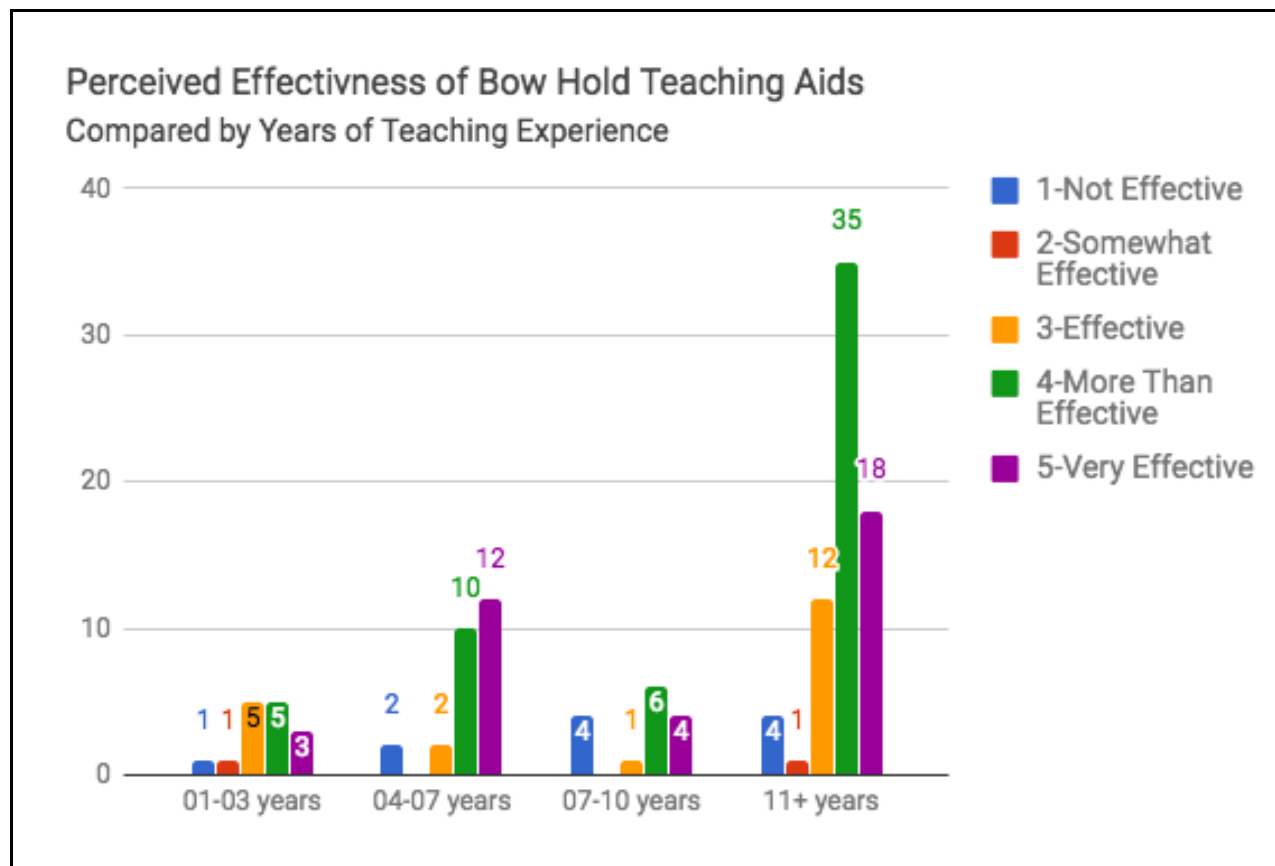


Right Hand Bow Hold Teaching Aids

The majority of respondents (79.3%) indicated in Question 31 that they used teaching aids to develop or remediate the bow hold. Teachers with more experience seemed to have the highest satisfaction with the effectiveness of the teaching aids (see table 4, below).

Table 4

Comparison of Effectiveness of Bow Hold Aids by Years of Teaching Experience



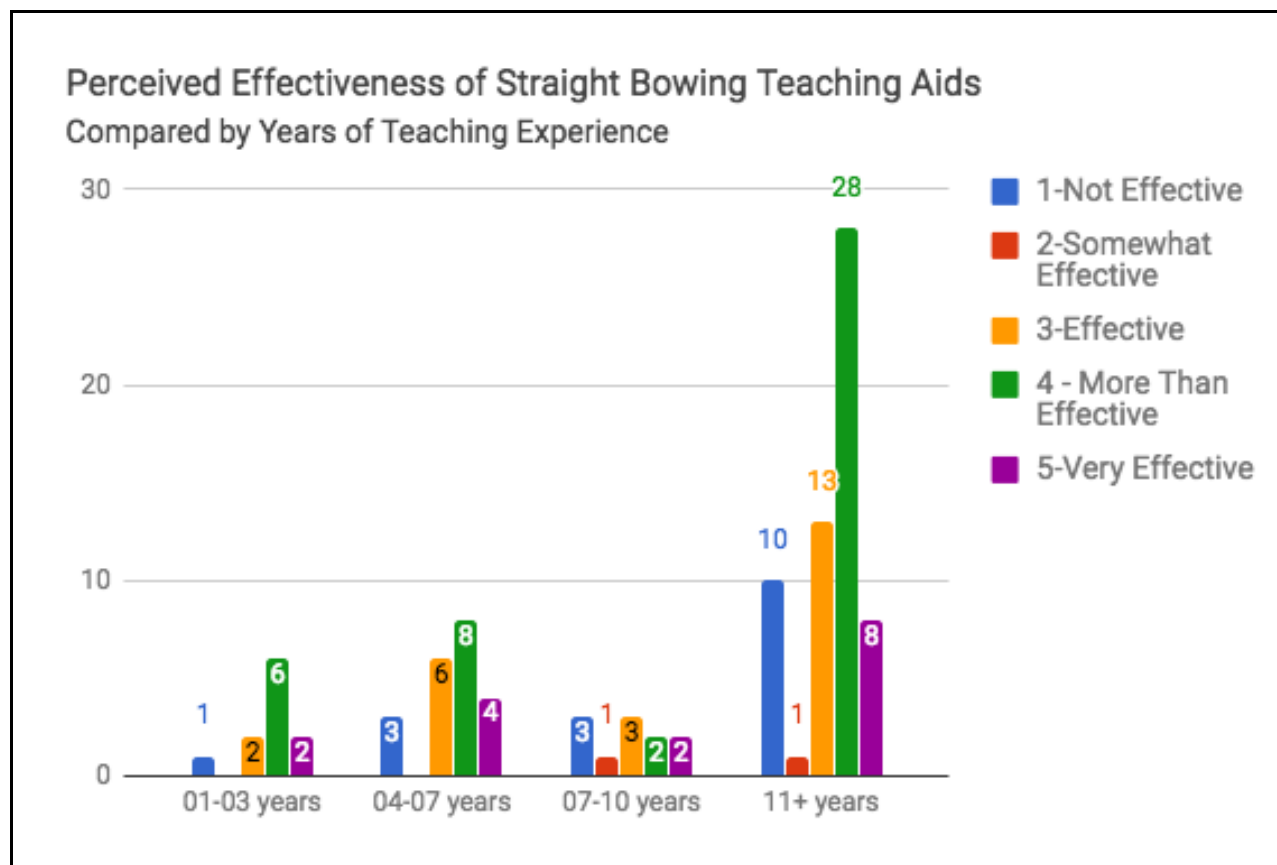
Right Hand Straight Bowing Aids

In comparing the 59.3% percent of respondents who reported they used straight bowing aids (and the respondents who reported they did not use the aids because they did not consider them effective), with years of experience teaching, again it is clear that the more experienced teachers thought that teaching aids help students learn how to bow straight are effective.

Although the effectiveness rating in the previous comparison tables tended to reflect the number of respondents in each teaching experience category, in this instance the beginning teacher group (01-03 years) had a small spike in the effectiveness rating (see table 5, below).

Table 5

Comparison of Effectiveness of Straight Bowing Aids by Years of Teaching Experience



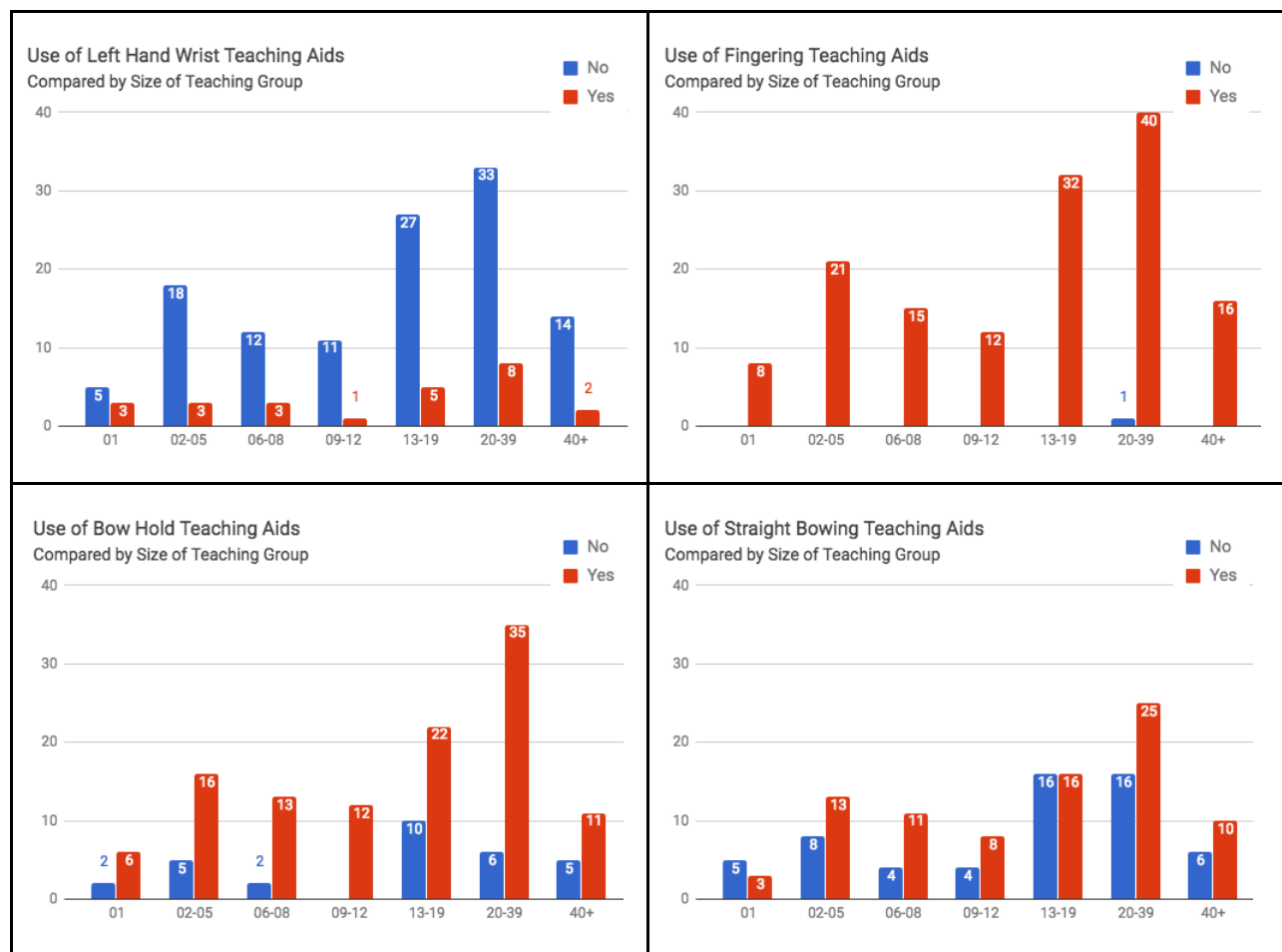
Use of Teaching Aids Compared with Size of Teaching Group

Another area of interest was whether the size of the teaching group affected the choice of whether or not to use teaching aids. The four charts in Table 6, below, compare the data collected in Question 5 - “How many students at a time do you typically teach when giving beginning strings lessons?” with the answer given when asked if the respondent used teaching aids for each of the four set-up areas. As only one respondent did not use left hand fingering aids, the fingering chart in Table 6 can be used as the constant for comparing the size of the groups with

the use of aids in the other three set-up areas. Generally, the spread of the “yes” data reflected the “group size” data. I was surprised that the bow hold and straight bowing aids were used in the group of 20-39 as I would have expected large groups not to use aids. When I made the prediction, I did not account for the use of the pencil to prepare the bow hold, which is why I think that set-up type consistently had large numbers in the large groups (see table 6, below).

Table 6

Use of Teaching Aids Compared by Size of Teaching Group



Chapter 4

Conclusion

The goal of this study was to determine if teachers of beginning strings students use teaching aids to help set up their students' straight left wrist, left hand shape for fingering and intonation, bow hold and ability to bow straight. An additional goal was to find out if the teachers who use the teaching aids find them effective. But the aspect of the study that I was most interested in, was the possibility that teachers would share their creative and innovative homemade teaching aids, so that this study could be a resource for other teachers of beginning strings students.

Expected Findings and Unexpected Results

Before releasing the survey, I had predicted that the more experienced the teacher, the less the need for teaching aids. I had expected that more experienced teachers would report that they do not find teaching aids effective or that their teaching skills are such that the aids would be unnecessary. I had also expected the data to show that less experienced teachers would embrace the use of aids, particularly with large groups of students, provided the cost and/or implementation are not prohibitive. The results of the survey showed me that I had underestimated the power of visual and tactile teaching aids and their appeal to both teacher and student. The large group of experienced teachers (with eleven or more years of teaching) - more than half of the respondents - was also the largest group of users of teaching aids in all four set-up areas. Of the teachers that chose not to use the aids, there were certainly some who responded that they had more effective ways to teach that didn't require aids, but the number of respondents who made those statements did not reflect a majority of the non-users. The use of teaching aids seemed to be reflected in the data for all levels of teaching experience.

Another prediction was that there would be a correlation between the size of the ensemble and the type of teaching aid used. For instance, I expected that some devices, such as fingering tapes, would be widely accepted and used by a majority of teachers with any size group. But I also hypothesized that some devices, such as those designed to help guide the bow straight, would only be used in private lessons or very small groups as the aid would be considered either be cost prohibitive or if homemade, difficult to implement and monitor in large groups. Again, the survey proved that I had underestimated the power of the teaching aid. I was correct that the teachers would widely accept left hand fingering teaching aids, such as finger tapes, but I never expected that the use would be almost unanimous (only one respondent did not use teaching aids for left hand fingering.) I found, as expected, that commercial teaching aids were rarely used, but was surprised to find they were used in both small groups and larger ensembles. Because the survey did not isolate individual teaching aids, it is not possible to determine exactly how a specific aid is used, so it is possible that the more expensive commercial teaching aids were used by only one or two students at a time in a larger ensemble class. But for homemade solutions or low cost items such as stickers, size of group was not a deterrent to using teaching aids. Although I expected that only the fingering aids would have wide use in both small groups and ensembles, the survey showed that teaching aids were widely used for all sizes of student groups in all four set-up areas, with the predominant use of teaching aids in the larger group of 20-39 students.

Improvements to the Study

My survey was quite long and thorough, but I do believe that through this method of sampling string teachers, I was able to gather a relatively accurate representation of the use of teaching aids, which I hope may be reflective of the larger community of strings teachers. There

could have been improvements on the design of the survey - for instance the “experienced teacher” group included teachers with eleven or more years of experience, but because that group made up over half of the respondents, that group tended to represent the larger numbers in the use of teaching aids. If I had included another group of “master teachers”, with twenty or more years of experience, it may have altered the results in a way that would have made it clearer if experience was a factor in the use of teaching aids.

There was a problem in the way Google Forms gathered the data - which wasn’t discovered until almost the very end of the process of analyzing the data. After sifting through results to compare data from different questions in the survey, it was discovered that somehow the records of four respondents were duplicated and sometimes more than once. Once I found the duplicated records, I had to carefully check the data to make sure there were no additional duplications, remove the duplicated records in a way that Google Forms would recognize, and then redo all the numbers and percentages that had been gathered in Chapter Three. I believe this task was done correctly and that the data reflected after the cleanup is accurate. This appears to be more a problem with Google Forms than with the design of the study, but if I extended this study to reach more teachers, I would research this problem further to find ways to prevent this type of problem in the future.

Further research

The nature of this survey, though quite detailed, can still be deemed a general overview of the use of teaching aids for the four set-up areas. It would be interesting to do a more detailed survey that is focused on each individual teaching aid used by each respondent. This could give a more nuanced picture of what aids are used for exactly what situation, size group, and perceived

effectiveness. I believe that a larger sampling of respondents would also generate some additional creative ideas for use by the string teacher community.

This survey reported “perceived” effectiveness of teaching aids. Action research studies on the actual effectiveness of teaching aids for beginning strings students would seem to be the next step. Studies could include determining if using teaching aids from the onset of teaching a skill also teach the muscles the correct positions. For instance, would using teaching aids from the onset of teaching a student to shape the left wrist “teach” the muscles the correct straight wrist position, or would the more comfortable “pancake wrist” appear once the teaching aid is no longer used? Studies could compare the effectiveness of different types of teaching aids for the same set-up area. Or compare the effectiveness of use a particular teaching aid with teaching methods that do not use teaching aids. There are opportunities for studying the use of teaching aids for tactile and visual approaches to teaching more advanced techniques such as vibrato, shifting, and advanced bowing articulation. I believe there is much opportunity for study and advancement of the use of the teaching aid in modern strings pedagogy.

Summary and Final Thoughts

A brief abstract of this very involved study can be digested down to the following:

- Of the teachers sampled, experienced teachers tended to use the teaching aids more than the inexperienced teachers.
- Of the four set-up areas, the only area where teaching aids were used by only a small group of respondents was for the left hand straight wrist. For the other three areas (fingering, bow hold and straight bowing), the majority of teachers used teaching aids.

- The size of group taught did not seem to have an effect on the use of teaching aids, as all group sizes were represented in the data. Teaching aids seemed to be most prevalent in the 20-39 student-sized groups.
- Teachers who self-reported as using teaching aids considered them effective. Most of them considered them more than effective or very effective. Only a small percentage (approximately two percent) considered the teaching aids that they used less than effective.
- Teachers who chose not to use teaching aids indicated a range of reasons why they did not use them. Some considered them not effective, but many others were concerned with taking up too much class time to implement, too many students to administer, lack of resources to purchase the aids, or lack of time to make them.
- Teachers came up with creative and inexpensive teaching aid solutions.
- Teachers were interested in more solutions, especially for the lower strings.

The use of teaching aids in the strings pedagogy of the past may have amounted to mostly sticks, thumbtacks and teacups, but I predict that we will see more and more innovative teaching aids, due to the explosion of interest in sharing ideas on social media regarding creative solutions to classic string pedagogy problems. For instance, I plan to share the catalog of teaching aids generated by this survey with the string teacher communities on social media. (See Appendix E: Catalog of Teaching Aids). I believe that teaching aids for beginning string students are here to stay, and I hope that this thesis will be the beginning of a string of resources for anyone interested in finding new solutions to old problems.

Appendix A: Terminology

Terminology may need to be defined for those readers that may not be familiar with the terms, or the synonyms that may be used in this thesis or in the literature reviewed.

Pedagogical Touch

In her thesis *Pedagogy of Distance: Touch in Education*, Maria Ellene Dimas defines the term “pedagogical touch” simply as “where a teacher and a student are in physical contact” (ix). Pedagogical touch is frequently used when teaching beginning strings players, as described by Hamman and Gillespie as a necessary intervention for remediation of a student’s posture or hand position (33).

Set-up

The term “set-up” (alternatively “setup” or “set up”) when used in strings education is loosely used by strings teachers and does not seem to be officially defined in the literature reviewed. The term refers to two related areas:

1) Set-up, when referring to the instrument, relates to the specifics of the instrument itself, such as the size of the instrument and bow; the changeable components of the instrument, such as the strings, chin rest, tailpiece, fine tuners, pegs; and particular accessories such as shoulder rests, which are designed to secure the instrument on the shoulder, promoting good posture and freeing the left hand from holding the instrument to facilitate shifting.

2) Set-up, when referring to the student, relates to the physical arrangement of limbs and muscles when playing a string instrument. The term “set-up” implies the posture of the student when standing or sitting, the way the student holds the instrument, how the left hand, wrist, and

elbow are used when fingering notes, the position of the right hand when holding the bow and the use of the right elbow and bow when bowing.

String Instrument

The term “string instrument” can mean instruments with frets, such as the guitar, ukulele, mandolin and similar instruments, as well as instruments without frets, such as orchestral strings and the harp. In this study, the term “string instrument” specifically refers to violin, viola, cello (violincello) and string bass (bass or double bass).

Teaching Aids

The focus of this study is on physical objects used to establish, remediate, and maintain a physical set-up of the student which is conducive to good playing technique. These objects are referred to as “teaching aids”, though the words devices, tools, props, objects, gizmos, and gadgets have been used interchangeably with the term “teaching aids”.

Appendix B: Survey of Strings Teachers

What's In Your String Teacher Toolbox?

This survey is designed to poll teachers of beginning strings students to find out if and how they use teaching aids, props or devices to develop or correct setup of the following:

- Left hand wrist
- Left hand fingering
- Right hand bow hold
- Right hand/arm straight bowing

The data will be analyzed and a comprehensive list of homemade and commercially available teaching aids will be developed and made available for use by teachers of beginning string students.

*** Required**

1. Do you teach beginning strings students? *

Mark only one oval.

- ☐ Yes *Skip to question 2.*
- ☐ No *Skip to "Sorry! This survey is intended for teachers of beginning strings students. Thank you for your interest.."*

Tell us about your teaching...

2. How long have you taught beginning strings? *

Mark only one oval.

- ☐ 1-3 years
- ☐ 4-7 years
- ☐ 7-10 years
- ☐ 11+ years

3. Where do you teach your beginning strings students? (check all that apply, if "other", please describe) *

Check all that apply.

- ☐ Private Studio
- ☐ Afterschool/Saturday/Community Program
- ☐ Public School
- ☐ Charter School
- ☐ Private School
- ☐ Other: _____

4. What environment do you teach your beginning strings students in? *

Mark only one oval.

- ☐ Lessons only
- ☐ Ensemble class only
- ☐ Lessons and Ensemble Class

5. How many students at a time do you typically teach when giving beginning string lessons? *

Mark only one oval.

- ☐ 1
- ☐ 2-5
- ☐ 6-8
- ☐ 9-12
- ☐ 13-19
- ☐ 20-39
- ☐ 40+

6. How old is your typical beginning strings student? *

Mark only one oval.

- ☐ 6 or younger
- ☐ 7-9
- ☐ 10-13
- ☐ 14-17
- ☐ 18 and older
- ☐ Various ages

Left Hand Wrist Aids

This section describes the use of teaching aids, props or devices such as these to assist the beginning string student in developing the desired left hand wrist position.

Left Hand Wrist Aids:

Commercial:

- Wrist Rascal
- Virtuoso Wrist

Homemade:

- Marshmallow taped to neck/wrist
- Thumbtack on neck
- Straw taped to thumb button
- Other

7. Do you use teaching aids to develop or correct the LEFT HAND WRIST POSITION? *

Mark only one oval.

- ☐ Yes *Skip to question 9.*
- ☐ No *Skip to question 8.*

I do not use LEFT HAND WRIST AIDS in my teaching because...

8. What is the primary reason you do not use LEFT HAND WRIST aids? (if "other", please describe) *

Mark only one oval.

- ☐ Too expensive
- ☐ Not enough time to make homemade aids
- ☐ Setting up students to use the aid takes too much class time
- ☐ Do not think they are effective
- ☐ Unaware of aids used for this purpose
- ☐ Other: _____

Skip to question 19.

Left Hand Wrist Aids

9. **What teaching aids do you use with beginning strings students to develop or correct the LEFT HAND WRIST POSITION? (check all that you use, if "other", please give a descriptive name) ***

Check all that apply.

- ☐ Wrist Rascal (commercial product)
- ☐ Virtuoso Wrist (commercial product)
- ☐ Marshmallow on neck/wrist
- ☐ Thumbtack on neck
- ☐ Straw taped to thumb button
- ☐ Other: _____

10. **If you chose "other" to list a homemade LEFT HAND WRIST aid, please describe the device and how it is used.**

11. **In what environment do your beginning students use these aids? ***

Mark only one oval.

- ☐ Individual or Small Group Lessons
- ☐ Ensemble Classes
- ☐ Both

12. **When do you typically begin using aids to support the LEFT WRIST? (if "other", please describe) ***

Mark only one oval.

- ☐ From onset of teaching the setup
- ☐ When needed for remediation
- ☐ Other: _____

13. How long does a typical student use LEFT HAND WRIST aids? *

Mark only one oval.

- ☐ 1-2 lessons
- ☐ 3-5 lessons
- ☐ 6-9 lessons
- ☐ 10+ lessons
- ☐ Year 1
- ☐ Year 1 and 2

14. How does the typical student use LEFT HAND WRIST aids? (check all that apply) *

Check all that apply.

- ☐ With teacher guidance
- ☐ With peer tutoring
- ☐ At school (self-managed)
- ☐ At home (self-managed)

15. How effective do you feel these aids are in developing the desired LEFT WRIST POSITION? *

Mark only one oval.

	1	2	3	4	5	
Not Effective	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Effective

16. What are your main reasons for using LEFT HAND WRIST aids? (check all that apply, if "other", please describe) *

Check all that apply.

- ☐ Beginning strings students find it difficult to maintain the correct position by themselves
- ☐ Not enough class time to give attention to correcting the left wrist manually
- ☐ Too many students to correct manually
- ☐ Other: _____

17. What instruments do you use LEFT HAND WRIST aids for? (check all that apply) *

Check all that apply.

- ☐ Violin/Viola
- ☐ Cello
- ☐ Bass

18. If you use different LEFT HAND WRIST aids for specific instruments or situations, please describe:

Left Hand Fingering Aids

This section describes the use of teaching aids, props or devices such as these to assist the beginning string student in developing the desired left hand finger positions and to improve intonation.

Left Hand Fingering Aids:

Commercial:

- Finger Tape
- Mark! Set! Go! Fingerboard Tapes
- First Frets Position Indicator
- Don't Fret Position Indicator
- Fiddle Fingerboard Fret Guide
- FingerMaps Sticker Labels

Homemade:

- Stickers for fingerboard
- Finger tape
- Corn pads for thumb
- Velcro on neck for thumb
- Other

19. Do you use teaching aids to develop or correct LEFT HAND FINGER POSITIONS? *

Mark only one oval.

- ☐ Yes Skip to question 21.
- ☐ No Skip to question 20.

I do not use left hand fingering aids in my teaching because...

20. What is the primary reason you do not use LEFT HAND FINGERING aids? (if "other", please describe) *

Mark only one oval.

- ☐ Too expensive
- ☐ Not enough time to make homemade aids
- ☐ Setting up students to use the aid takes too much class time
- ☐ Do not think they are effective
- ☐ Unaware of aids used for this purpose
- ☐ Other: _____

Skip to question 31.

Left Hand Fingering Aids

21. What teaching aids do you use with beginning strings students to develop or correct LEFT HAND FINGERING? (check all that you use, if "other", please give a descriptive name) *

Check all that apply.

- ☐ Finger Tape (commercial product)
- ☐ Mark! Set! Go! Fingerboard Tapes (commercial product)
- ☐ First Frets Position Indicator (commercial product)
- ☐ Don't Fret Position Indicator (commercial product)
- ☐ Fiddle Fingerboard Fret Guide (commercial product)
- ☐ FingerMaps Sticker Labels (commercial product)
- ☐ Stickers for fingerboard
- ☐ Finger tape (masking tape, car detailing tape, etc.)
- ☐ Corn pads for thumb position
- ☐ Velcro on neck for thumb position
- ☐ Other: _____

22. If you chose "other" to list a homemade FINGERING aid, please describe the device and how it is used.

23. In what environment do your beginning students use these aids? *

Mark only one oval.

- ☐ Individual or Small Group Lessons
- ☐ Ensemble Classes
- ☐ Both

24. When do you typically begin using FINGERING aids? (if "other", please describe) *

Mark only one oval.

- ☐ From onset of teaching the setup
- ☐ When needed for remediation
- ☐ Other:

25. How long does a typical student use FINGERING aids? *

Mark only one oval.

- ☐ 1-2 lessons
- ☐ 3-5 lessons
- ☐ 6-9 lessons
- ☐ 10+ lessons
- ☐ Year 1
- ☐ Year 1 and 2

26. How does the typical student use FINGERING aids? (check all that apply) *

Check all that apply.

- ☐ With teacher guidance
- ☐ With peer tutoring
- ☐ At school (self-managed)
- ☐ At home (self-managed)

27. How effective do you feel these aids are in developing the desired FINGERING POSITIONS AND INTONATION? *

Mark only one oval.

1 2 3 4 5

Not Effective ☐ ☐ ☐ ☐ ☐ Very Effective

28. What are the main reasons you use FINGERING aids? (check all that apply, if "other", please describe) *

Check all that apply.

- ☐ Beginning strings students find it difficult to navigate the fingerboard by themselves
- ☐ Not enough class time to give attention to correcting the finger positions for each student
- ☐ Too many students to correct manually
- ☐ Other: _____

29. What instruments do you use FINGERING aids for? (check all that apply) *

Check all that apply.

- ☐ Violin/Viola
- ☐ Cello
- ☐ Bass

30. If you use different FINGERING aids for specific instruments or situations, please describe:

Right Hand Bow Hold Aids

This section describes the use of teaching aids, props or devices such as these to assist the beginning string student in developing the desired right hand bow hold.

Right Hand Bow Hold Aids:**Commercial:**

- Bow Hold Buddies – Frog/Fish/Cellophant
- L'MS Snail Bow Hold Grip
- Super-Sensitive Bowmaster
- AcoustaGrip Bow Grip
- Stringvision Bow Grip
- Pinkinest
- Bow-Nut Donuts

Homemade:

- Pencil
- Dowel Rod
- PVC Pipe
- Pinky nest (masking tape)
- Corn cushions
- Bow "tattoos"
- Other

31. Do you use teaching aids to develop or correct the RIGHT HAND BOW HOLD? *

Mark only one oval.

- ☐ Yes Skip to question 33.
- ☐ No Skip to question 32.

I do not use Right Hand Bow Hold Aids in my teaching because...

32. What is the primary reason you do not use RIGHT HAND BOW HOLD aids? (if "other", please describe) *

Mark only one oval.

- ☐ Too expensive
- ☐ Not enough time to make homemade aids
- ☐ Setting up students to use the aid takes too much class time
- ☐ Do not think they are effective
- ☐ Unaware of aids used for this purpose
- ☐ Other: _____

Skip to question 43.

Right Hand Bow Hold Aids

33. What teaching aids do you use with beginning strings students to develop or correct the BOW HOLD? (check all that you use, if "other", please give a descriptive name) *

Check all that apply.

- ☐ Things 4 Strings Bow Hold Buddies - Frog (commercial product)
- ☐ Things 4 Strings Bow Hold Buddies - Hold Fish (commercial product)
- ☐ Things 4 Strings Bow Hold Buddies - Cellophant (commercial product)
- ☐ L'MS Snail Bow Hold Grip (commercial product)
- ☐ Super-Sensitive Bowmaster (commercial product)
- ☐ AcoustaGrip Bow Grip (commercial product)
- ☐ Stringvision Bow Grip (commercial product)
- ☐ Pinkinest (commercial product)
- ☐ Bow-Nut Donuts (commercial product)
- ☐ Pencil
- ☐ Dowel Rod
- ☐ PVC Pipe
- ☐ Pinky nest (masking tape)
- ☐ Corn cushions
- ☐ Bow "tattoos" (marker dots on hand to show contact points)
- ☐ Other: _____

34. If you chose "other" to list a homemade BOW HOLD aid, please describe the device and how it is used.

35. In what environment do your beginning students use BOW HOLD aids? *

Mark only one oval.

- ☐ Individual or Small Group Lessons
- ☐ Ensemble Classes
- ☐ Both

36. When do you typically begin using BOW HOLD aids? (if "other", please describe) *

Mark only one oval.

- ☐ From onset of teaching the setup
- ☐ When needed for remediation
- ☐ Other: _____

37. How long does a typical student use BOW HOLD aids? *

Mark only one oval.

- ☐ 1-2 lessons
- ☐ 3-5 lessons
- ☐ 6-9 lessons
- ☐ 10+ lessons
- ☐ Year 1
- ☐ Year 1 and 2

38. How does the typical student use BOW HOLD aids? (check all that apply) *

Check all that apply.

- ☐ With teacher guidance
- ☐ With peer tutoring
- ☐ At school (self-managed)
- ☐ At home (self-managed)

39. How effective do you feel these aids are in developing the desired BOW HOLD? *

Mark only one oval.

	1	2	3	4	5	
Not Effective	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Effective

40. What are the main reasons you use BOW HOLD aids? (check all that apply, if "other", please describe) *

Check all that apply.

- ☐ Beginning strings students find it difficult to find and maintain the correct bow hold position on their own
- ☐ Not enough class time to give attention to correcting the bow hold for each student
- ☐ Too many students to correct manually
- ☐ Other: _____

41. What instruments do you use BOW HOLD aids for? (check all that apply) *

Check all that apply.

- ☐ Violin/Viola
☐ Cello
☐ Bass

42. If you use different BOW HOLD aids for specific instruments or situations, please describe:

Right Hand Straight Bowing Aids

This section describes the use of teaching aids, props or devices such as these to assist the beginning string student in developing the ability to bow straight.

Right Hand Straight Bowing Aids:

Commercial:

- Bow Mate
- Bow-Right
- Bow Tracker
- Bow Force
- Super-Sensitive Tone Shaper

Homemade:

- Straws in the F holes
- Cardboard Tubes
- PVC pipe tubes
- Other

43. Do you use teaching aids to develop the ability to BOW STRAIGHT? *

Mark only one oval.

- ☐ Yes Skip to question 45.
☐ No Skip to question 44.

I do not use teaching aids to develop straight bowing because...

44. What is the primary reason you do not use STRAIGHT BOWING aids? (if "other", please describe) *

Mark only one oval.

- ☐ Too expensive
- ☐ Not enough time to make homemade aids
- ☐ Setting up students to use the aid takes too much class time
- ☐ Do not think they are effective
- ☐ Unaware of aids used for this purpose
- ☐ Other: _____

Skip to question 55.

Right Hand Straight Bowing Aids

45. What teaching aids do you use with beginning strings students to develop the ability to BOW STRAIGHT? (check all that you use, if "other", please give a descriptive name) *

Check all that apply.

- ☐ Bow Mate (commercial product)
- ☐ Bow-Right (commercial product)
- ☐ Bow Tracker (commercial product)
- ☐ Bow Force (commercial product)
- ☐ Super-Sensitive Tone Shaper (commercial product)
- ☐ Straws in the F holes
- ☐ Cardboard Tubes
- ☐ PVC pipe tubes
- ☐ Other: _____

46. If you chose "other" to list a homemade STRAIGHT BOWING aid, please describe the device and how it is used.

47. In what environment do your beginning students use STRAIGHT BOWING aids? *

Mark only one oval.

- ☐ Individual or Small Group Lessons
- ☐ Ensemble Classes
- ☐ Both

48. When do you typically begin using STRAIGHT BOWING aids? (if "other", please describe) *

Mark only one oval.

- ☐ From onset of teaching the setup
- ☐ When needed for remediation
- ☐ Other:

49. How long does a typical student use STRAIGHT BOWING aids? *

Mark only one oval.

- ☐ 1-2 lessons
- ☐ 3-5 lessons
- ☐ 6-9 lessons
- ☐ 10+ lessons
- ☐ Year 1
- ☐ Year 1 and 2

50. How does the typical student use STRAIGHT BOWING aids? (check all that apply) *

Check all that apply.

- ☐ With teacher guidance
- ☐ With peer tutoring
- ☐ At school (self-managed)
- ☐ At home (self-managed)

51. How effective do you feel these aids are in developing the ability to BOW STRAIGHT? *

Mark only one oval.

1 2 3 4 5

Not Effective ☐ ☐ ☐ ☐ ☐ Very Effective

52. What are the main reasons you use STRAIGHT BOWING aids? (check all that apply, if "other", please describe) *

Check all that apply.

- ☐ Beginning strings students find it difficult to bow straight
- ☐ Not enough class time to give attention to correcting the bow angle for each student
- ☐ Too many students to correct manually
- ☐ Other: _____

53. What instruments do you use STRAIGHT BOWING aids for? (check all that apply) *

Check all that apply.

- ☐ Violin/Viola
- ☐ Cello
- ☐ Bass

54. If you use different STRAIGHT BOWING aids for specific instruments or situations, please describe:

Skip to question 55.

Sorry! This survey is intended for teachers of beginning strings students. Thank you for your interest.

Stop filling out this form.

Thank you for taking the survey!

If you would be willing for me to contact you for more information about a homemade aid, or if you would like a copy of the comprehensive list of teaching aids when it is completed, please enter your email address below.

Thank you for your participation in taking this survey.

55. Email Address (optional)

Appendix C: Survey Invitation

The following invitation was distributed using a social media post to the Facebook closed group “School Orchestra and Strings Teachers” (5994 members) on October 22, 2016, with approval of the Administrator of the group, Gail Van Aernum Barnes. The invitation was also sent by email to the 153 string teacher members of WCSMA (Westchester Country School Music Association) in Westchester County, New York.

What’s in Your String Teacher Toolbox? I invite you to participate in my survey, which is the data gathering tool for my masters thesis at the University of the Arts. I am studying the practice of strings teachers in their use of both commercial and homemade devices (such as finger tapes, stickers, bow hold devices, etc.) as teaching aids for developing the beginning strings student’s setup. I am particularly interested in the creative approaches strings teachers use when they develop their own solutions. One of the goals of the thesis project is to compile a list of aids, both commercial and home-made, and return this information to the string teacher community. Please take a few moments to think about your practice and take the survey, which will take 10-15 minutes to complete.

[The link to the survey was included in the posting and email.]

Appendix D: Survey Results

For ease of reference, this appendix is divided into five sections - Teacher Demographics, Left Hand Straight Wrist, Left Hand Fingering, Right Hand Bow Hold, and Right Hand Straight Bowing teaching aids. Each graph or table is numbered according to the question it refers to.

TEACHER DEMOGRAPHICS

Figure D.1 - Question 1

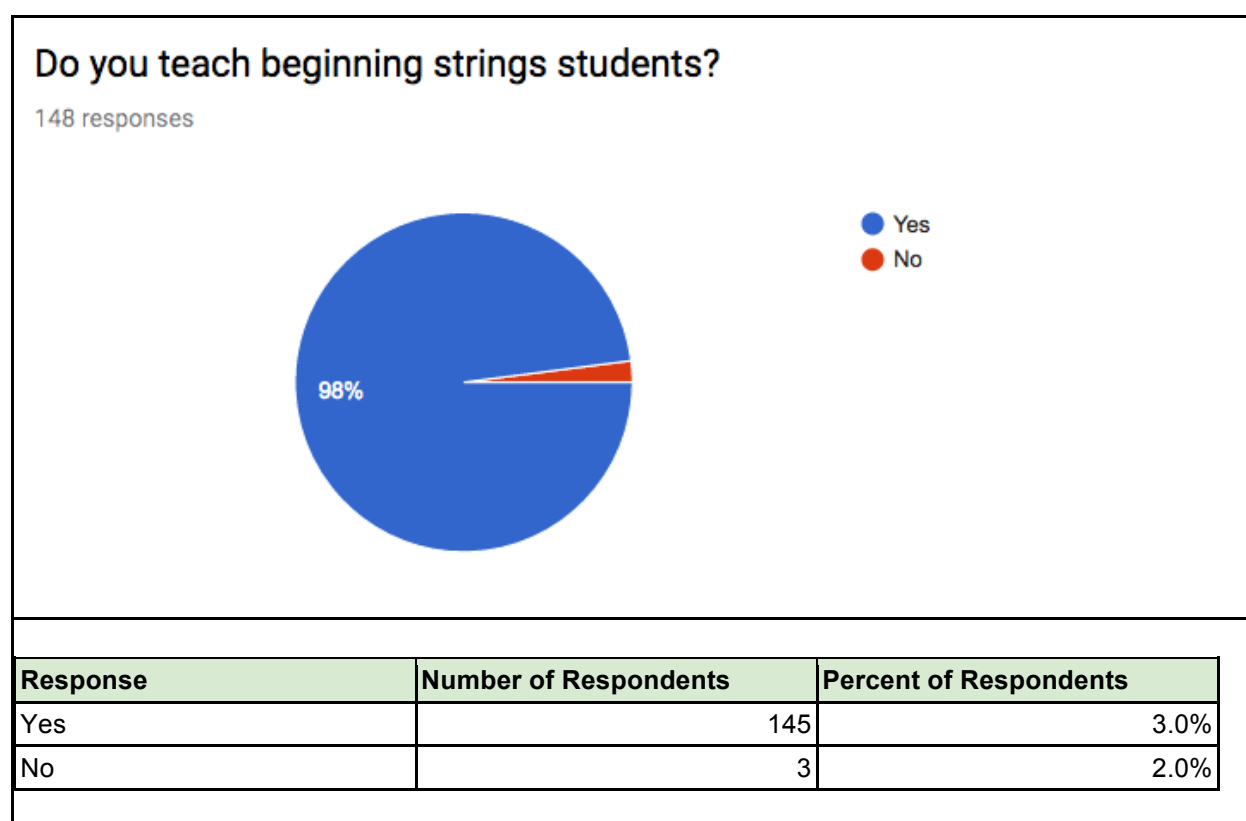


Figure D.2 - Question 2

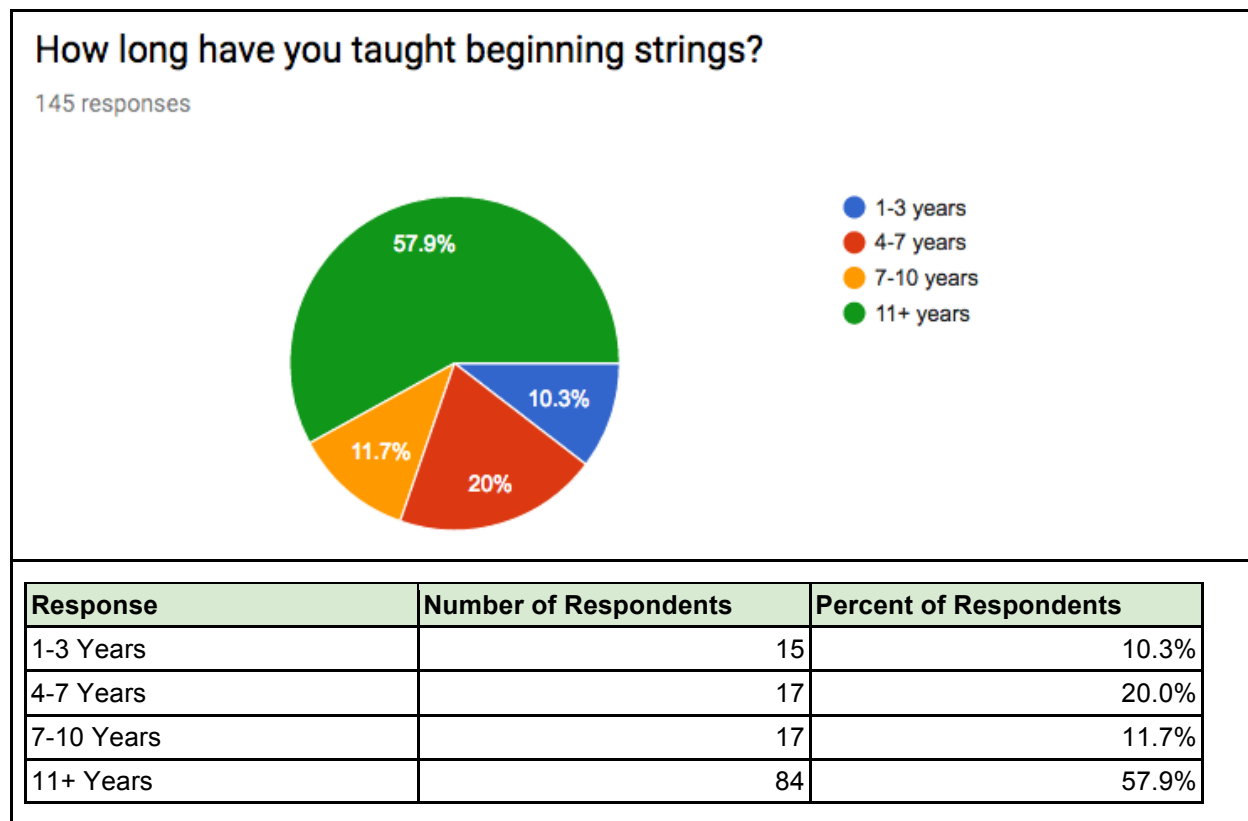


Figure D.3 - Question 3

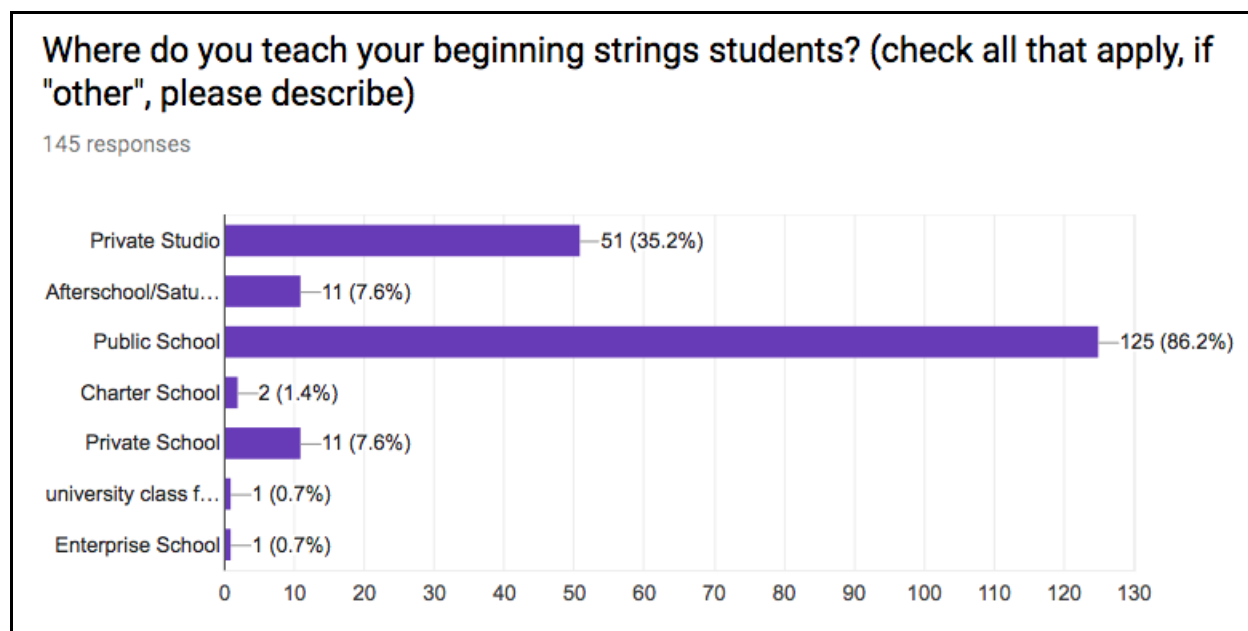


Figure D.4 - Question 4

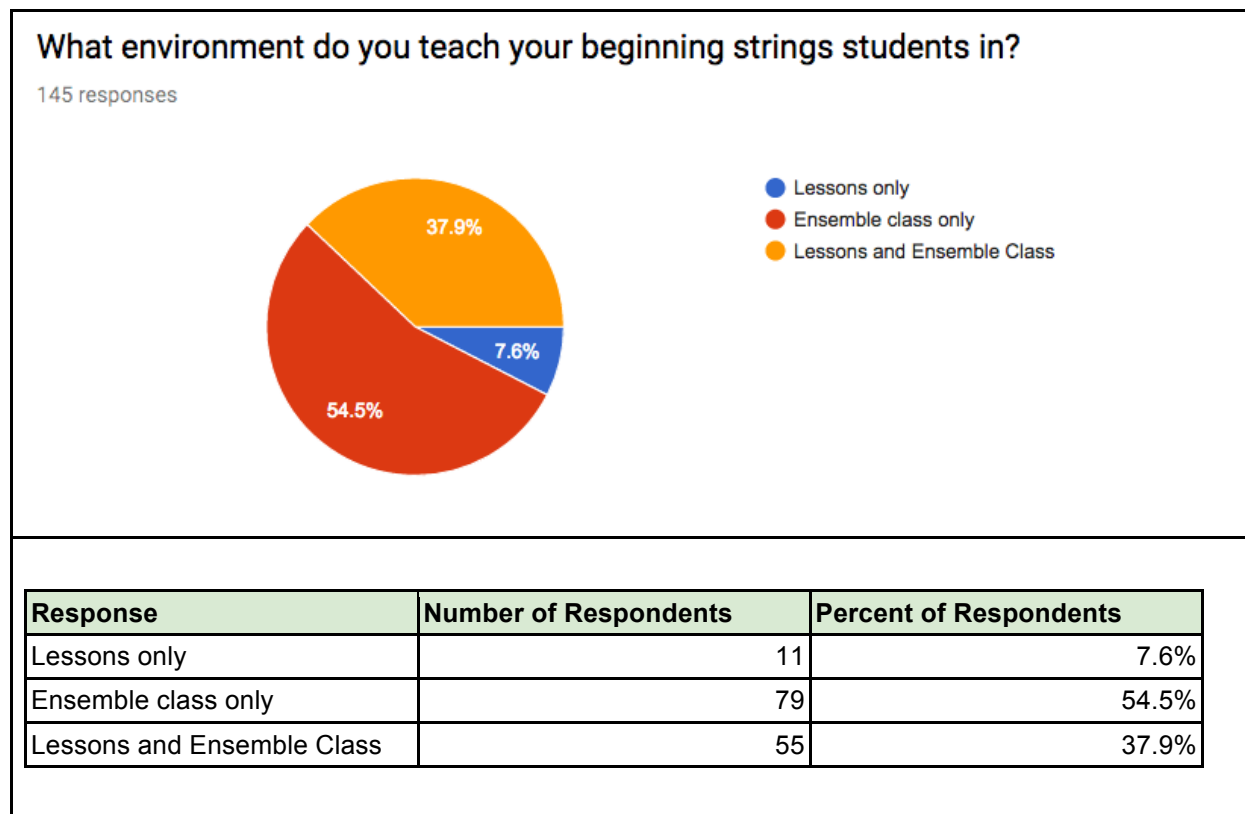
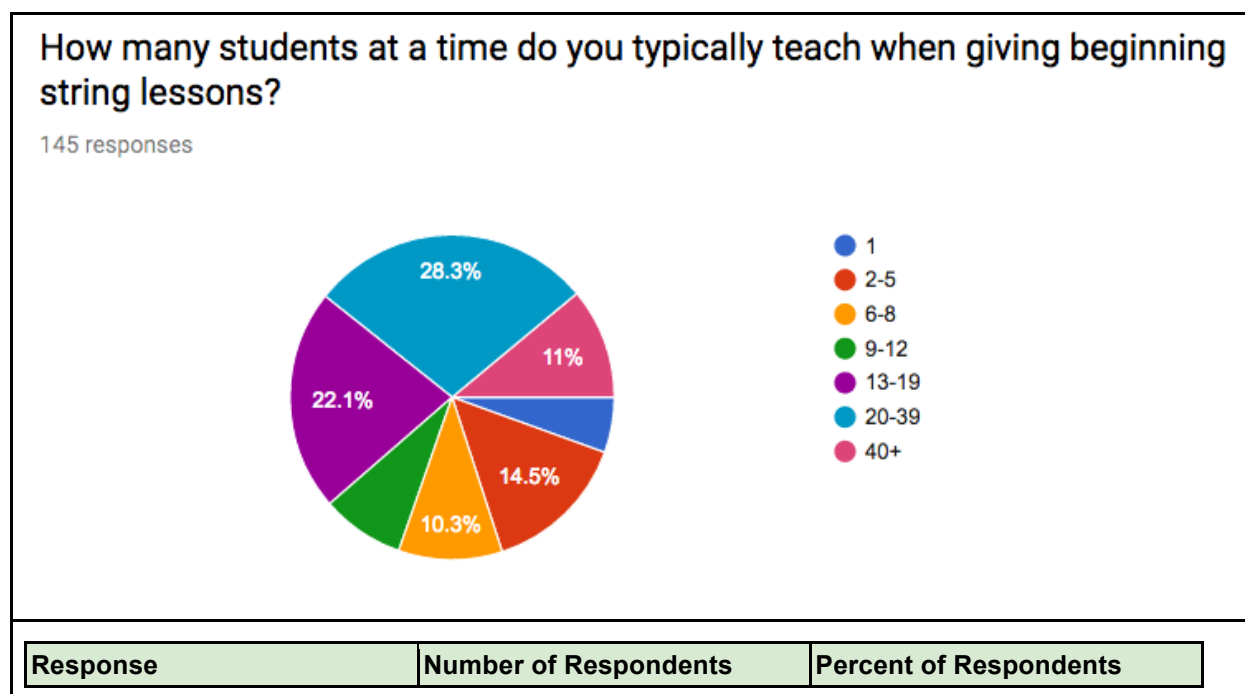
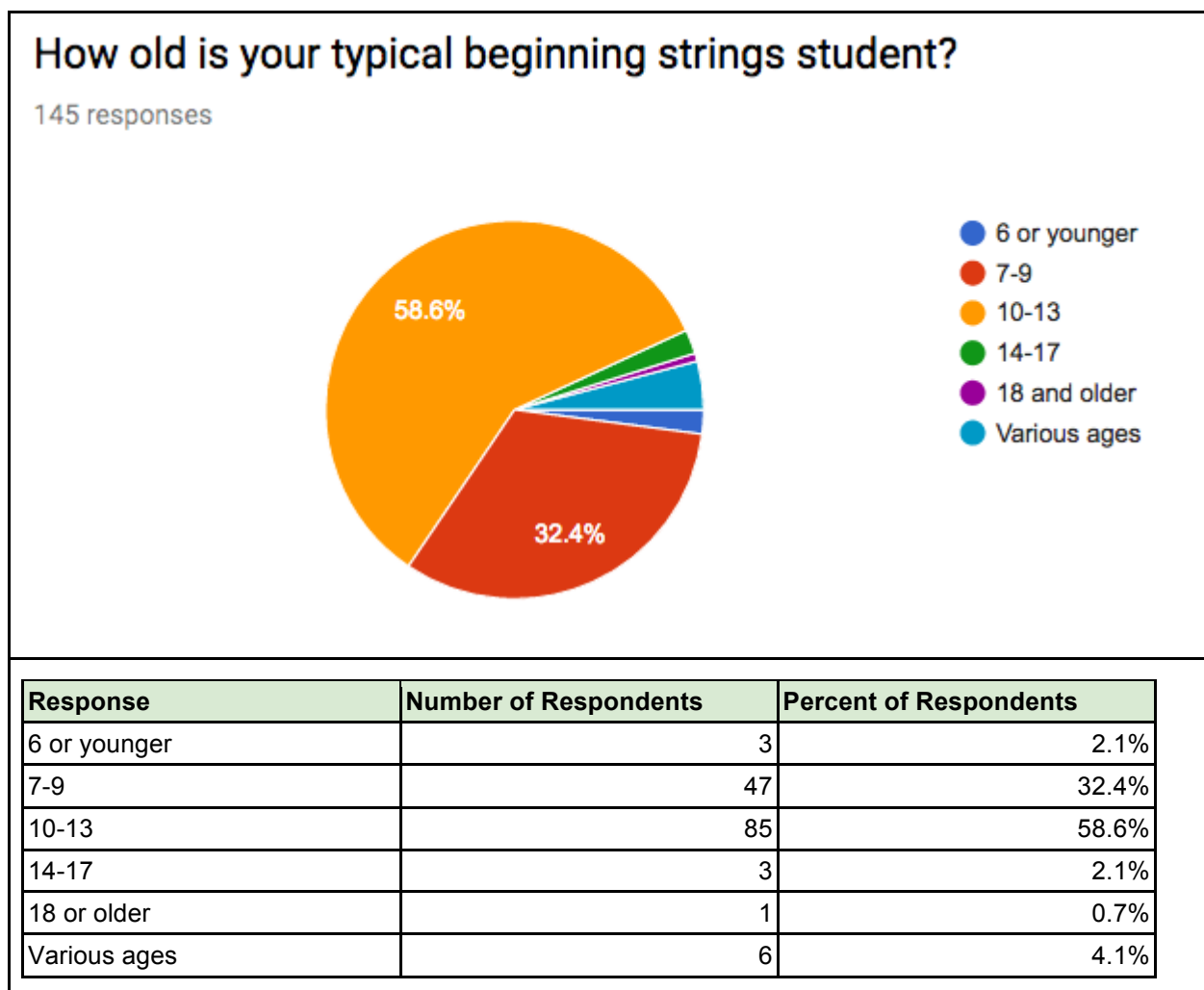


Figure D.5 - Question 5



1	8	5.5%
2-5	21	14.5%
6-8	15	10.3%
9-12	12	8.3%
13-19	32	22.1%
20-39	41	28.3%
40+	16	11.0%

Figure D.6 - Question 6



LEFT HAND STRAIGHT WRIST TEACHING AIDS

Figure D.7 - Question 7

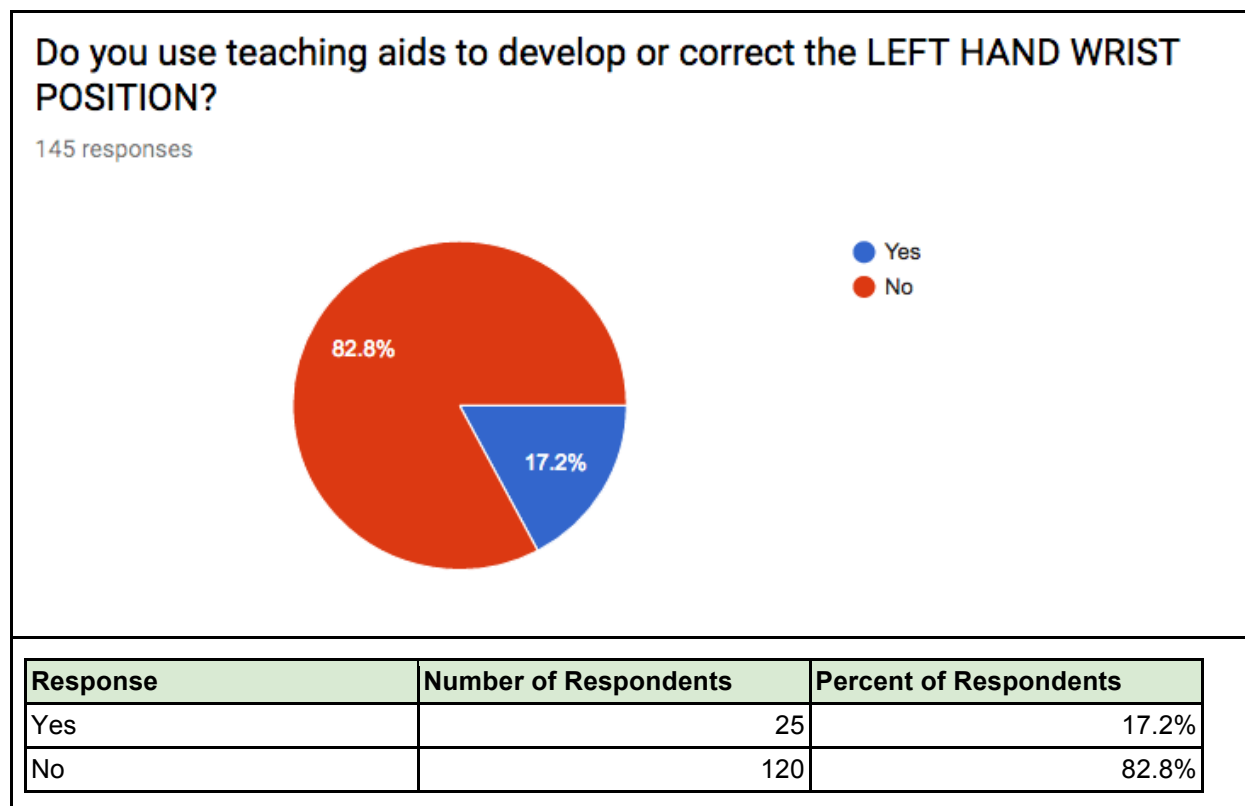
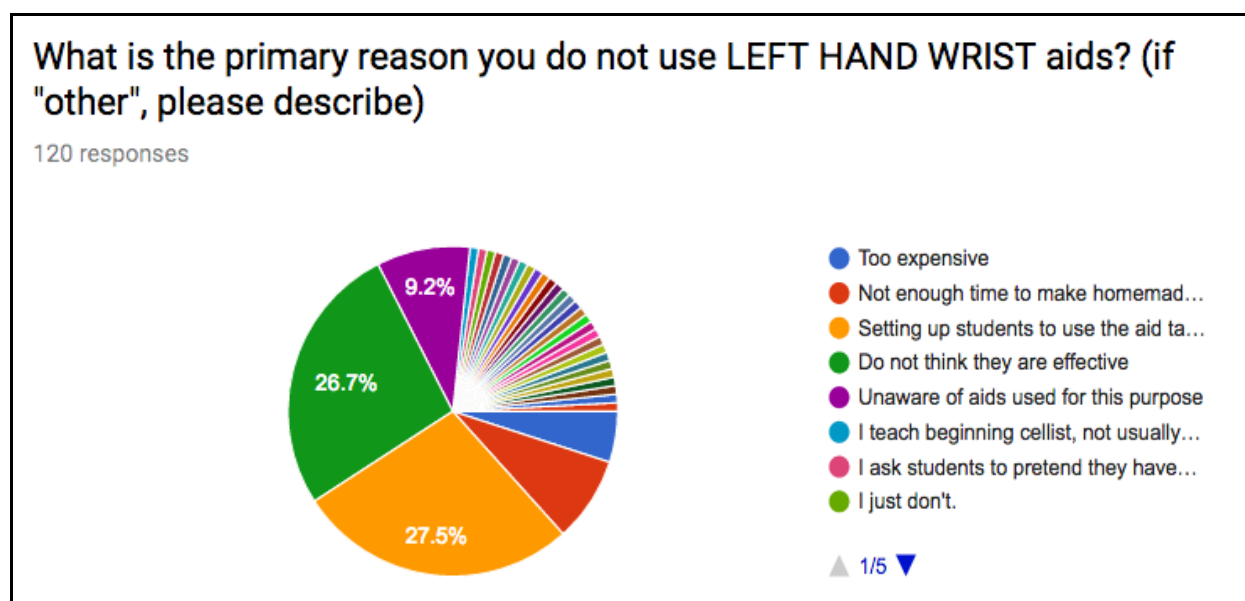


Figure D.8 - Question 8



Response	Number of Respondents	Percent of Respondents
Too expensive	6	5.0%
Not enough time to make homemade aids	10	8.3%
Setting up students to use the aids takes too much time	33	27.5%
Do not think they are effective	32	26.7%
Unaware of aids used for this purpose	11	9.2%
Other	28	23.3%

Other Reasons (sorted by keywords to group by common themes)	Keywords
Teach posture before placement of instrument	Good position no problem
A mix bag, I'm mostly try to get the proper technique to begin with. I'm not always sure aids work.	Good position no problem
By concentrating on chin/shoulder position, left hand/elbow seems easy for me to teach without any aids.	Good position no problem
They can learn without a crutch if they have good position	Good position no problem
The exercises I do with left hand down and left hand pizzicato warm ups put kids in the correct position.	Good position no problem
prefer to teach and reinforce position without aids	Good position no problem
So far I've been successful asking students to pointer left them at the ceiling and make sure there is space between their thumb in the nick of the instrument. I also put my students in row so I can walk up and down and check their position frequently and correct as needed	Good position no problem
I talk about and threaten with the thumb tack, but find that I stop enough to fix left hand posture that they get it pretty easily.	Good position no problem
I ask students to pretend they have the tack and achieve the desired result	Verbal cues/reminders
I just tell them to make a "bear cave" when I see a collapsed wrist. They need to remember that they need enough space for a tiny bear to come hibernate between their palm and the neck of their instrument!	Verbal cues/reminders
I have verbal cues to help and hands on techniques that I use	Verbal cues/reminders
I teach them why is is important to keep wrist straight and use constant reminders and verbal cues in teaching	Verbal cues/reminders
I have found that just reminding them works best for me	Verbal cues/reminders
I have phrases and other ways of reinforcing this	Verbal cues/reminders
I use verbal cues and symbolism - they learn to correct on their own - they do not rely on a crutch	Verbal cues/reminders
I see the students 5 days a week and use candy reinforcement	Monitor and reinforce
my students seem to do okay with monitoring and reminding	Monitor and reinforce
Continued effective teaching	Effective teaching
Not necessary.	Not necessary

Because with patience and time they are not necessary	Not necessary
I just don't.	Not necessary
Always have been under the impression that it was possible to do without.	Not necessary
Never felt the need	Not necessary
other techniques used	Not necessary
Aware of them, but otherwise all of the above.	All of above
have used in the past, but do not find them effective.	Not effective
Am unfamiliar with these; also, I have 35 in a class, so time is an issue.	No time in class
I teach beginning cellist, not usually as much of an issue as w/ violin/violas	Not Applicable

Figure D.9 - Question 9

Note that only partial text for the “other” responses from survey Question 9 is shown in the table below, but will be shown with full text in the table for survey Question 10 (see figure D.10).

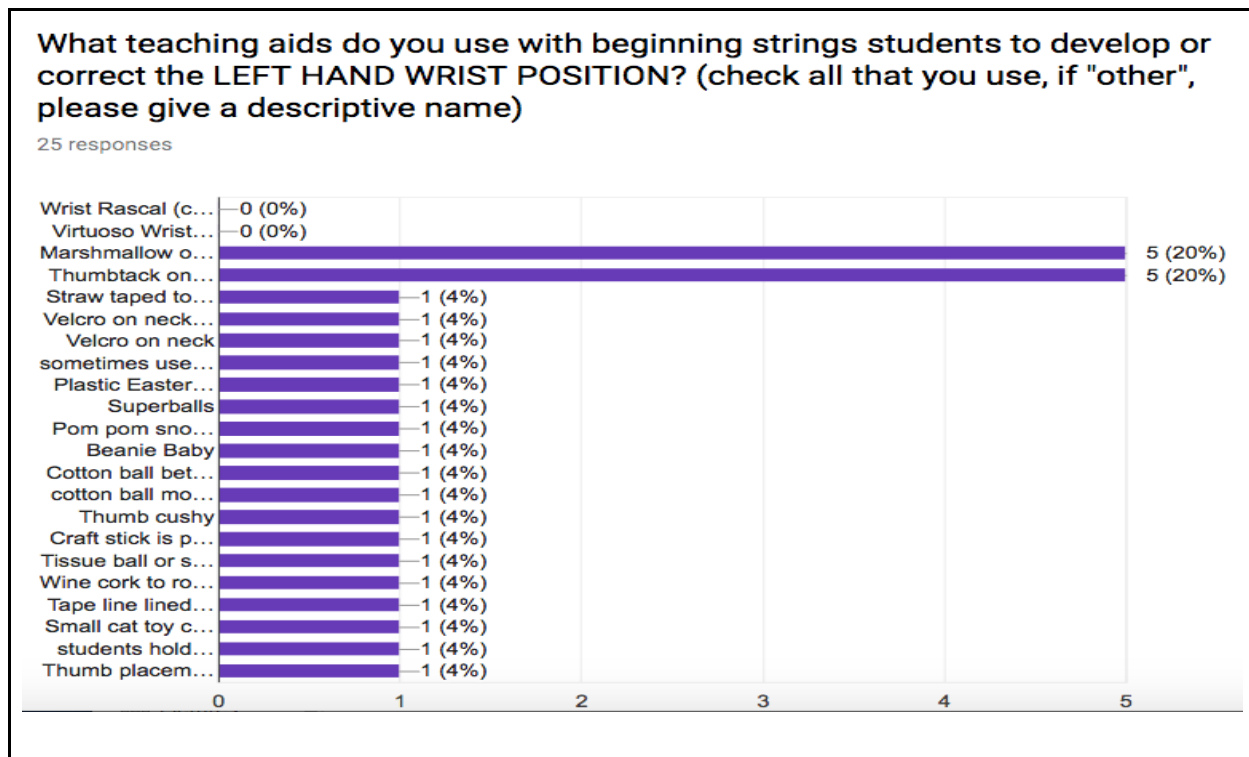


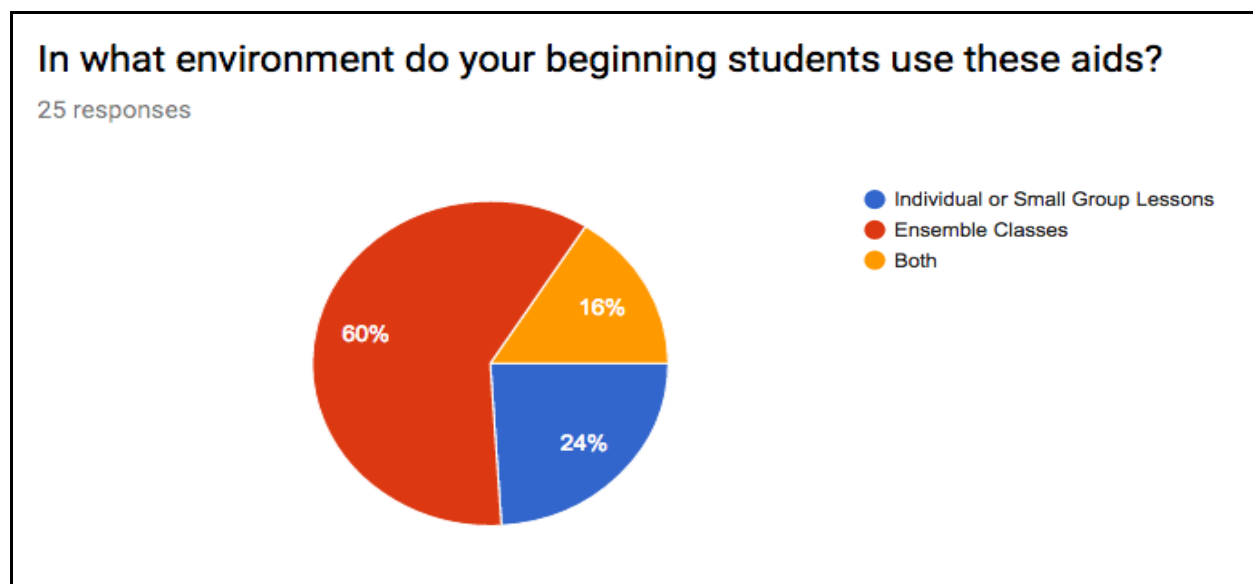
Figure D.10 - Question 10

Note that the table below includes all the “other” responses from Question 9 (see figure D.9 above) as well as the responses from Question 10. Because the respondents were allowed to choose multiple teaching aids, I have used bold face to designate a teaching aid that was entered using “Other”. Some of the comments from Question 10 relate back to the listed teaching aids as well as their other response. (Note that for clarity, I have combined the responses for “Other” from Question 9 with the respective comments from the respondents in Question 10.)

Teaching Aids for the Straight Left Wrist That Include “other” from Survey Question 9.	Survey Question 10 Responses to “If you chose ‘other’ to list a homemade LEFT HAND WRIST aid, please describe the device and how it is used.”
Velcro on neck, moleskin for thumb placement	Velcro on neck - I use the harder side in spots where the kids like to rest their wrist. I use moleskin or the soft Velcro for thumb placement
Velcro on neck	I put the fuzzy part of a patch of Velcro on the neck. It is a less barbaric version of the thumbtack trick.
Thumbtack on neck, sometimes use a small corn pad to establish placement of Left thumb	
Thumbtack on neck, Plastic Easter egg	
Superballs	Place superball in palm of hand while holding violin/viola. Superball (1 inch) fills the spaces and allows them to put hand in proper position. No pizza hand and wrist not too far out (ball drops).
Pom pom snowman	A pom pom snowman with sticky feet that is stuck to the violin. When wrist collapses it squishes the snowman.
Beanie Baby	Hold it gently by the front paw. Not squeezed. Works best with the bear/cat type
Cotton ball between thumb and neck	Helps to prevent squeezing
cotton ball mouse for mouse house	Place pet mouse in palm, he needs a house and a window. Be careful not to kill your pet mouse!
Thumb cushy	Place a corn pad of the neck of the instrument for the left thumb. This tells the student where and which way the thumb should point, therefore aiding the wrist position.

Craft stick is positioned on the back of the wrist so they have to keep it straight. The pool noodle is positioned between the wrist and the instrument as a barrier.	Craft stick with velcro straps attached Short length of pool noodle attached to wrist with bandage tape or velcro Not a device, but bend thumb so thumbnail is flat against the underside of the neck; this is of course not how they will play, but eliminates squeezing.
Tissue ball or small rubber ball	I have them hold the rubber ball or tissue ball between the palm of the hand and the neck. If they squeeze too tight it crushes the ball. After some practice with that, I'll remove the ball and have them use it as needed to remind them of how their wrist should feel. I will also occasionally have them freeze and see if their posture is right. If it's good, I should be able to show the ball in-between the palm and instrument neck.
Wine cork to round hand and keep wrist from collapsing	
Tape line lined up with thumb	We use tapes and the thumb is lined up with that.
Small cat toy cupped in hand to keep wrist off the neck.	
students hold a mini-Easter egg or cotton ball in their left palm	see above [respondent is referring to the response in Question 9, shown on the left]
Thumb placement/Spy Guy	By making sure the left thumb is pointing to the ceiling and the top just peaking over the fingerboard like a Spy. If allowed you can draw eyes and nose on the top of the thumb to turn it into Spy Guy.

Figure D.11 - Question 11



Response	Number of Respondents	Percent of Respondents
Individual or Small Group Lessons	6	24.0%
Ensemble Classes	15	60.0%
Both	4	16.0%

Figure D.12 - Question 12

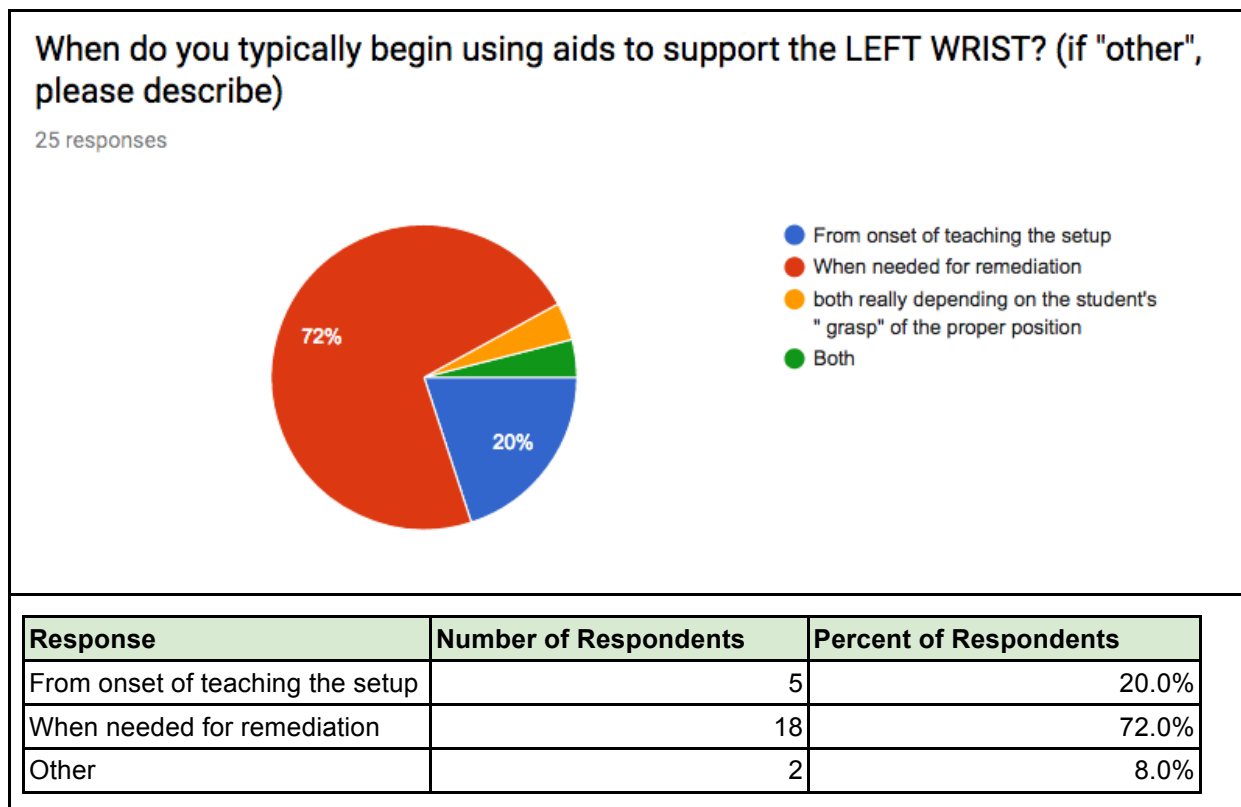


Figure D.13 - Question 13

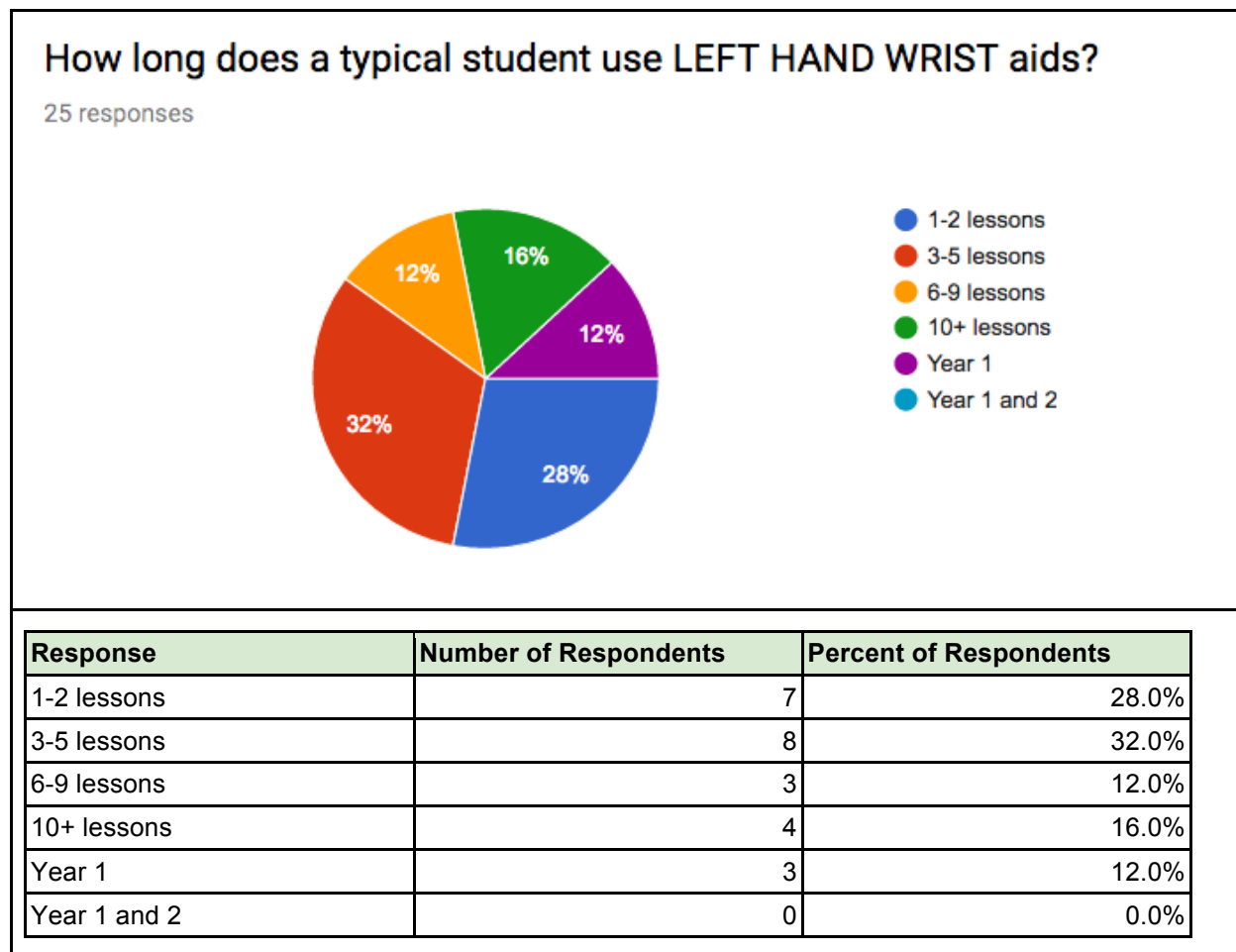


Figure D.14 - Question 14

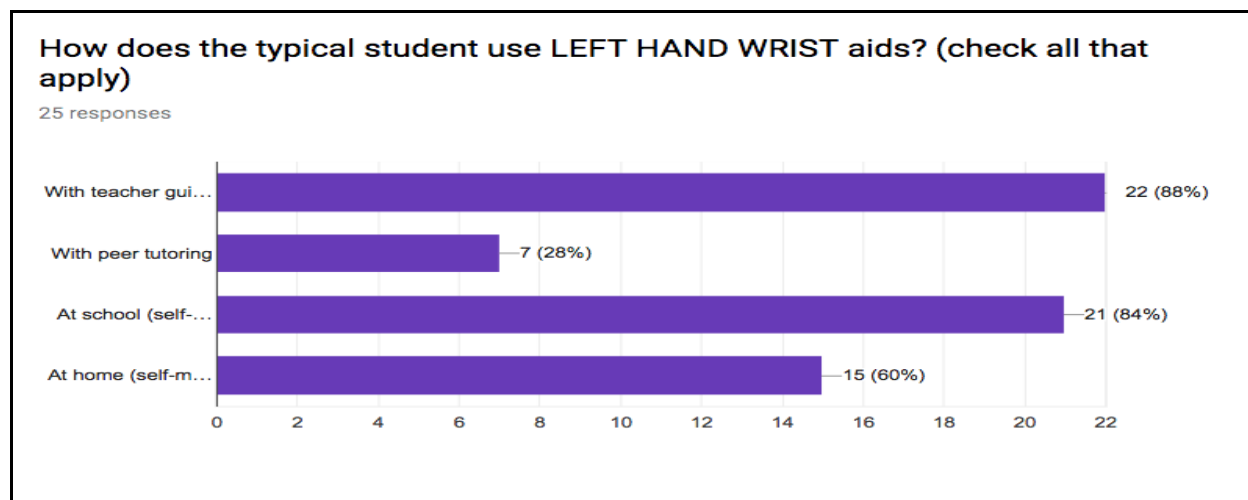


Figure D.15 - Question 15

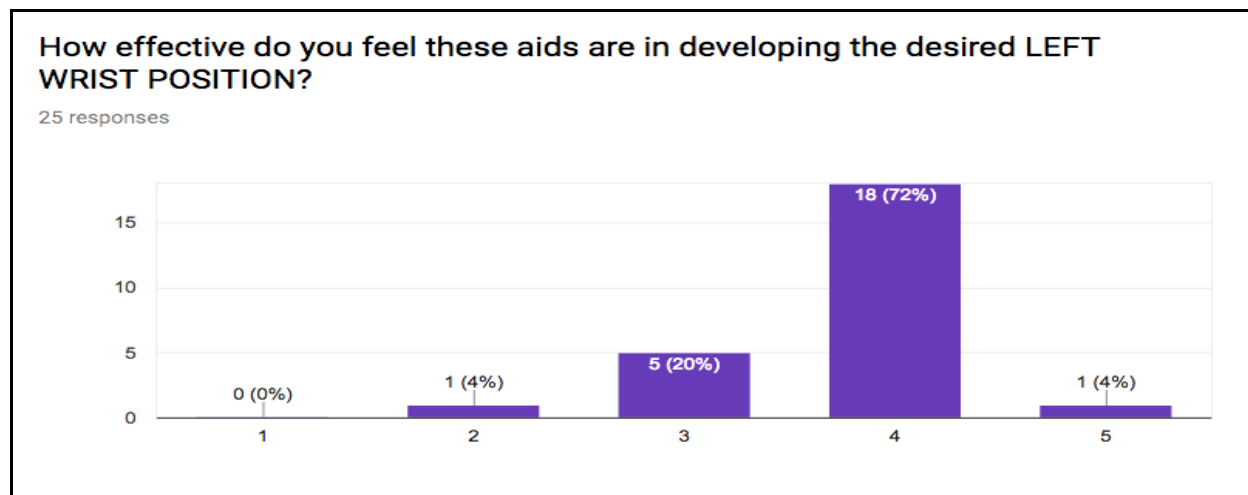


Figure D.16 - Question 16

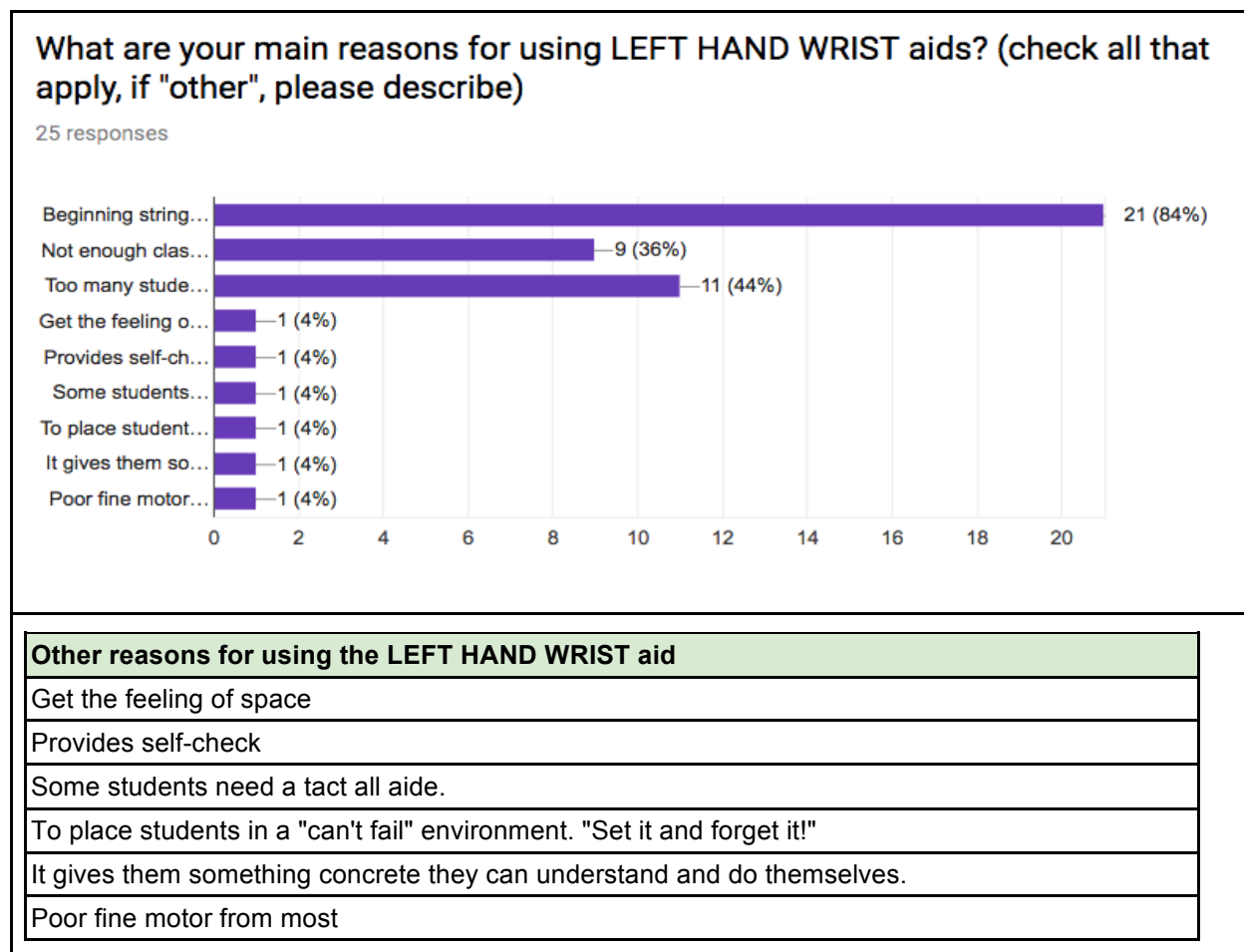


Figure D.17 - Question 17

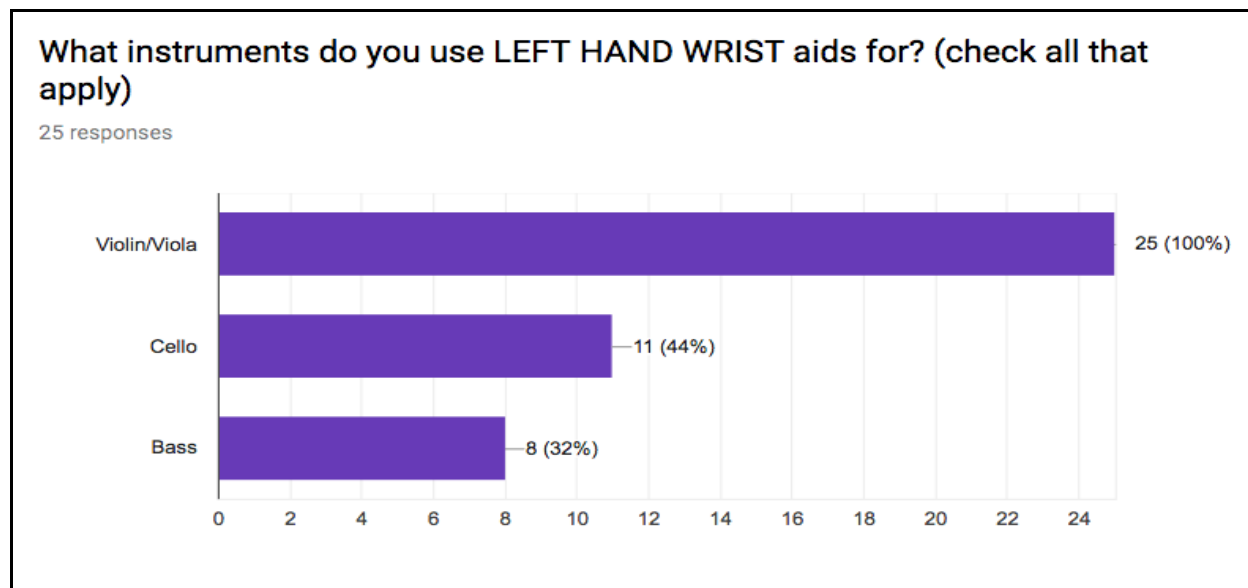
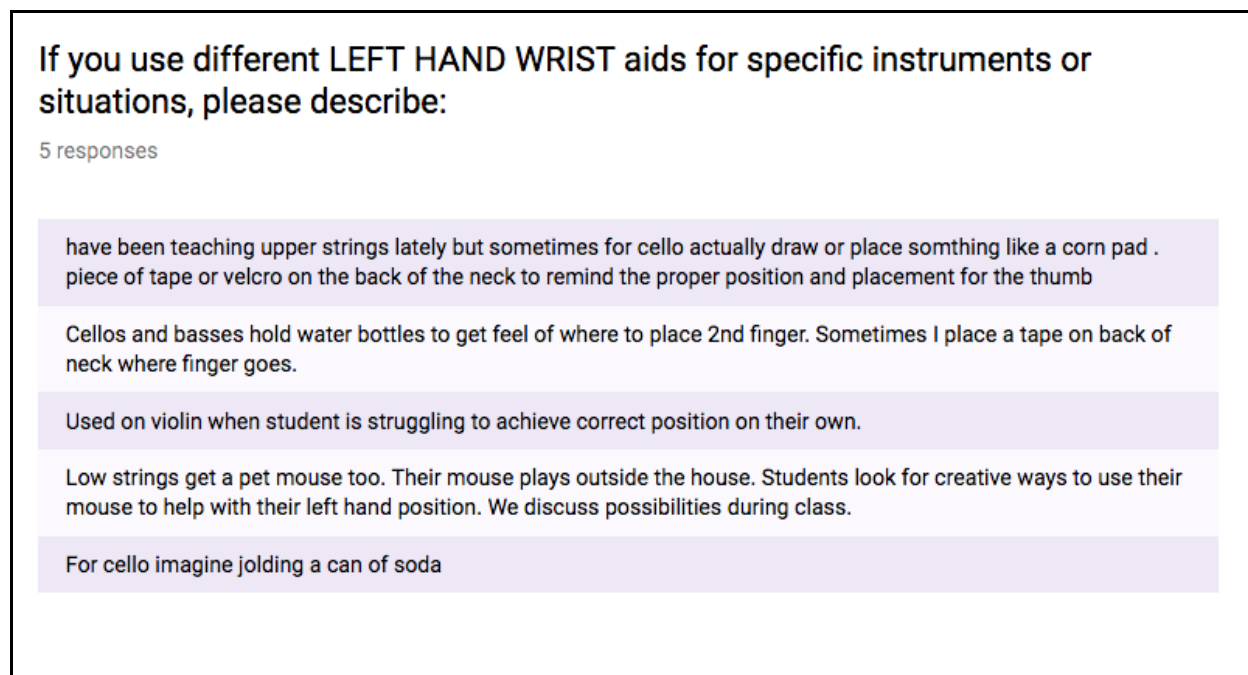


Figure D.18 - Question 18



LEFT HAND FINGERING TEACHING AIDS

Figure D.19 - Question 19

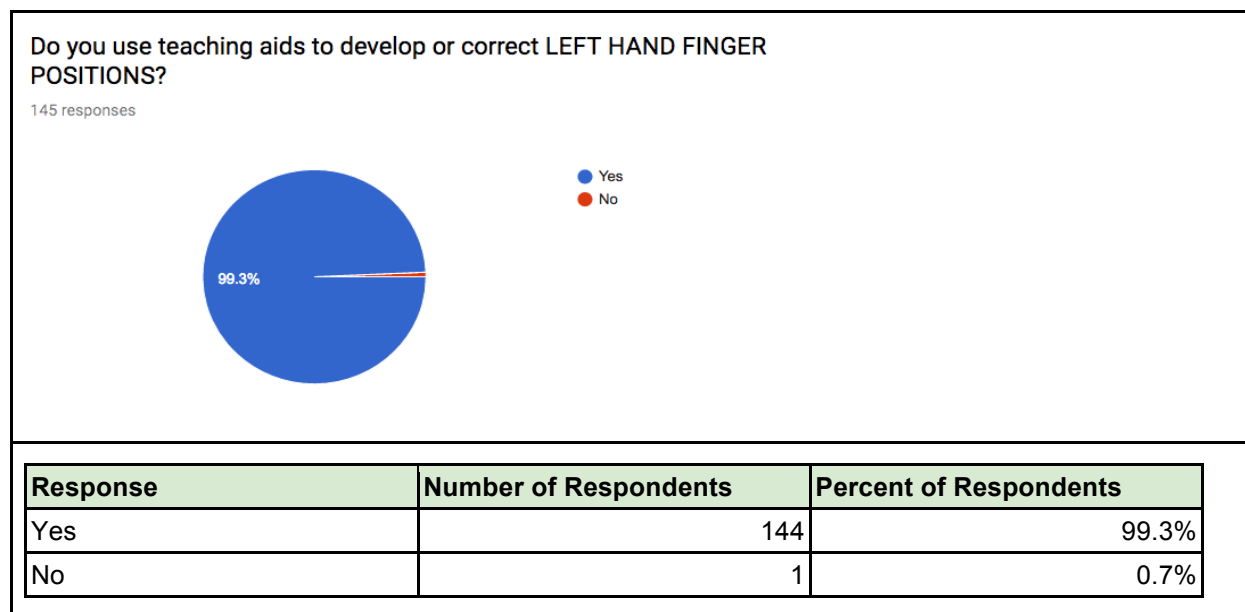


Figure D.20 - Question 20

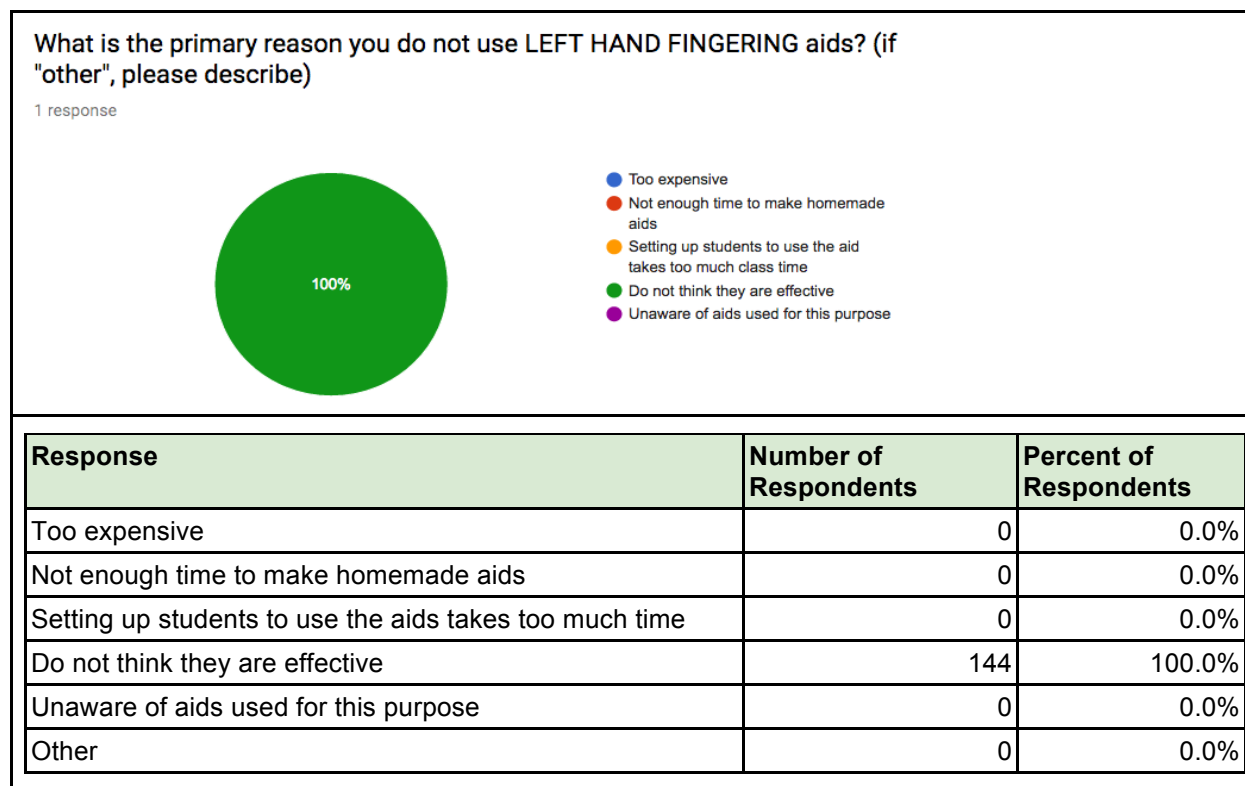
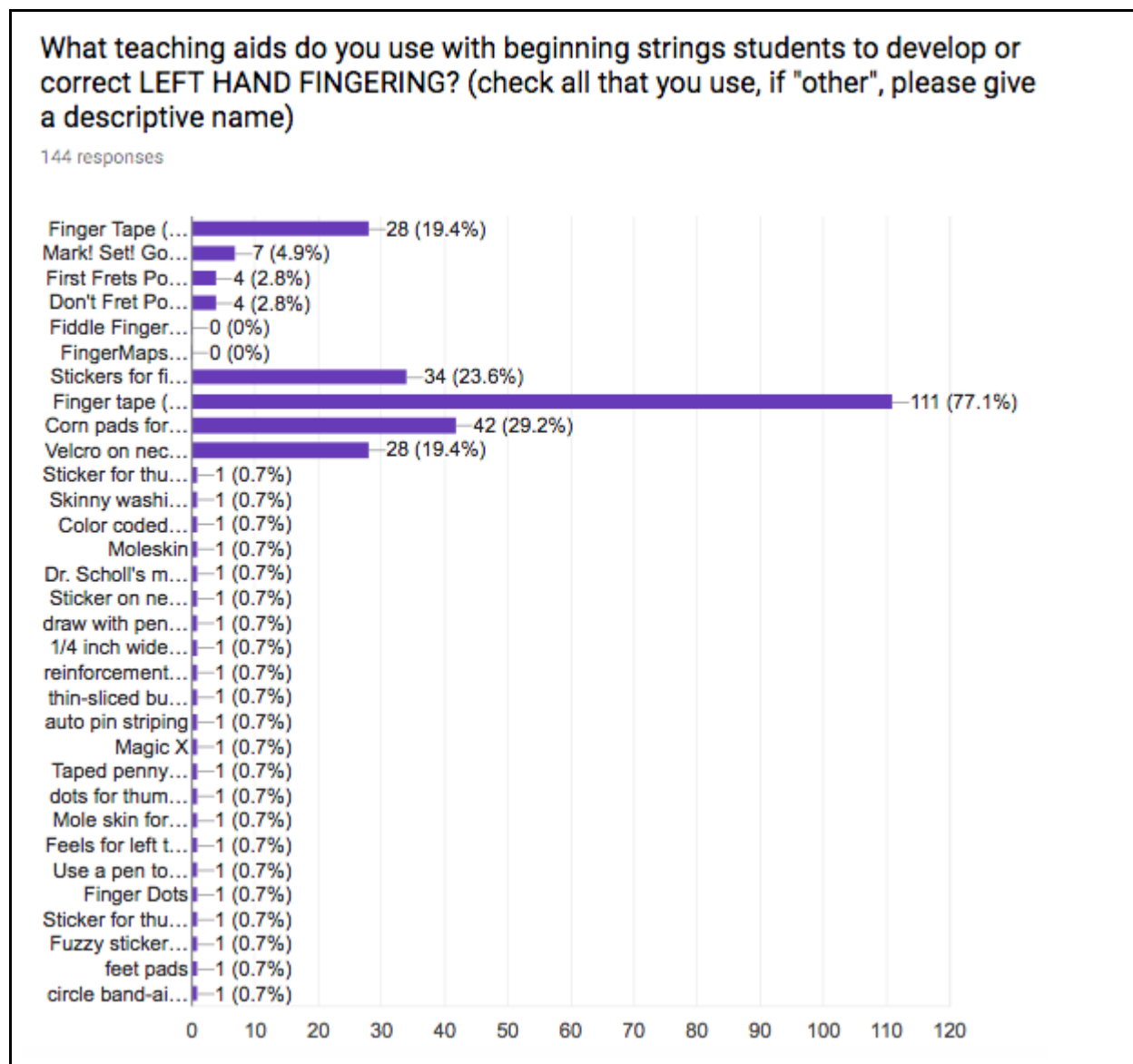


Figure D.21 - Question 21

Note that only partial text for the “other” responses from Question 21 is shown in the table below, but will be shown with full text in the table for Question 22 (see figure D.22).

**Figure D.22 - Question 22**

Note that the table below includes all the “other” responses from survey Question 21 (see figure D.21 above) as well as the responses from survey Question 22. Because the respondents were allowed to choose multiple teaching aids, I have used bold face to designate a teaching aid

that was entered using “Other”. Some of the comments from Question 22 relate back to the listed teaching aids as well as their “Other” response. (Note that for clarity, I have combined the responses for “Other” from Question 21 with the respective comments in Question 22.)

Responses to Survey Question 21 that included “Other”	Responses to Survey Question 22 that included a description of “other” device from Survey Question 21
Finger tape (masking tape, car detailing tape, etc.), Sticker for thumb positio	I use small round stickers instead of a corn pad for the thumb placement. I use this because I already have them, they're subtle, and students will feel it.
Skinny washi tape from michaels	
Corn pads for thumb position, Color coded Avery 1/8" dots	Color coded Avery 1/8" dots located under the D string. Includes D, E, F, F#, G, and A
Stickers for fingerboard, Finger tape (masking tape, car detailing tape, etc.), Corn pads for thumb position, Velcro on neck for thumb position, Moleskin	Moleskin for thumb placement
Finger Tape (commercial product), Stickers for fingerboard, Finger tape (masking tape, car detailing tape, etc.), Dr. Scholl's mole foam for thumb placement or index knuckle placement	I cut a small piece of mole foam to create the right size cushy spot for student need
Finger tape (masking tape, car detailing tape, etc.), Sticker on neck for thumb position	Sticker on cello/bass neck to mark thumb position
Stickers for fingerboard, Finger tape (masking tape, car detailing tape, etc.), Corn pads for thumb position, Velcro on neck for thumb position, draw with pencil as needed	for example if student has tapes for e-f# G maybe a sticker for the pinkie . If student cannot seem to find f natural or E -flat , try a pencil spot
1/4 inch wide colored draftsman tape	The 1/4 inch wide, colored draftsman-style tape doesn't have super-sticky back
Finger tape (masking tape, car detailing tape, etc.), reinforcements on neck for thumb position	reinforcement on neck for thumb position
Finger tape (masking tape, car detailing tape, etc.), Corn pads for thumb position, thin-sliced bumper stickers	
auto pin striping	For left hand finger placement and thumb placement cello.
Magic X	mark an x on the inside of left index finger near the base.
Finger tape (masking tape, car detailing tape, etc.), Taped penny for cello/bass thumb	Tape a penny on the neck for cello/bass thumb print placement behind 2nd finger
Finger tape (masking tape, car detailing tape, etc.), Corn pads for thumb position, dots for thumb placement	put a sticky dot or marking for left hand thumb placement
Finger tape (masking tape, car detailing tape, etc.), Mole skin	

for cello/bass thumb placement	
Finger Tape (commercial product), Finger tape (masking tape, car detailing tape, etc.), Corn pads for thumb position, Velcro on neck for thumb position, Feels for left thumb	Felt for lh thumb
Stickers for fingerboard, Finger tape (masking tape, car detailing tape, etc.), Corn pads for thumb position, Velcro on neck for thumb position, Use a pen to mark smiley faces on the finger pads/tips	
Finger tape (masking tape, car detailing tape, etc.), Finger Dots	Bass Finger Position Marks (White out dots on the side of the fingering board)
Stickers for fingerboard, Finger tape (masking tape, car detailing tape, etc.), Sticker for thumb	
Finger tape (masking tape, car detailing tape, etc.), Fuzzy stickers or foam stickers for thumb.	
Finger tape (masking tape, car detailing tape, etc.), Corn pads for thumb position, feet pads	
Finger Tape (commercial product), circle band-aid for thumb position	Band-aid is stuck to side of neck at first finger tape, or for cello: behind neck

Figure D.23 - Question 23

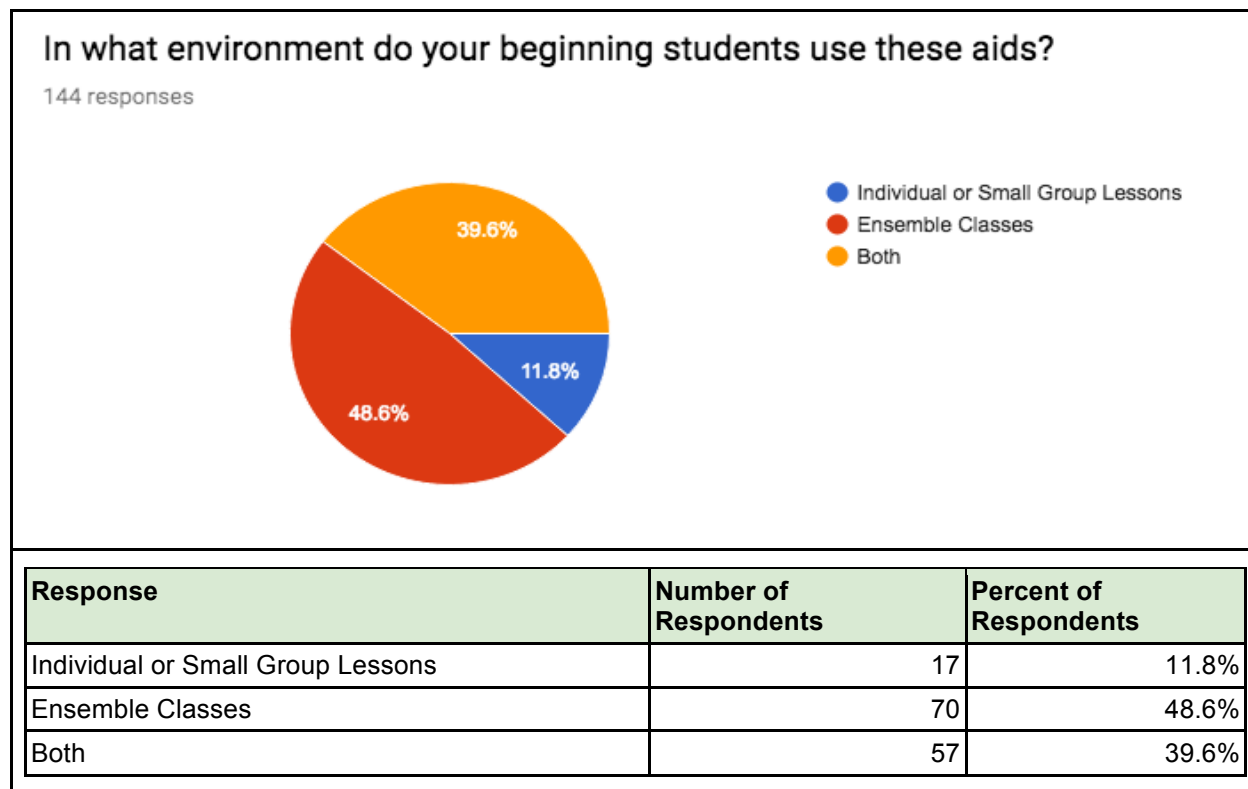


Figure D.24 - Question 24

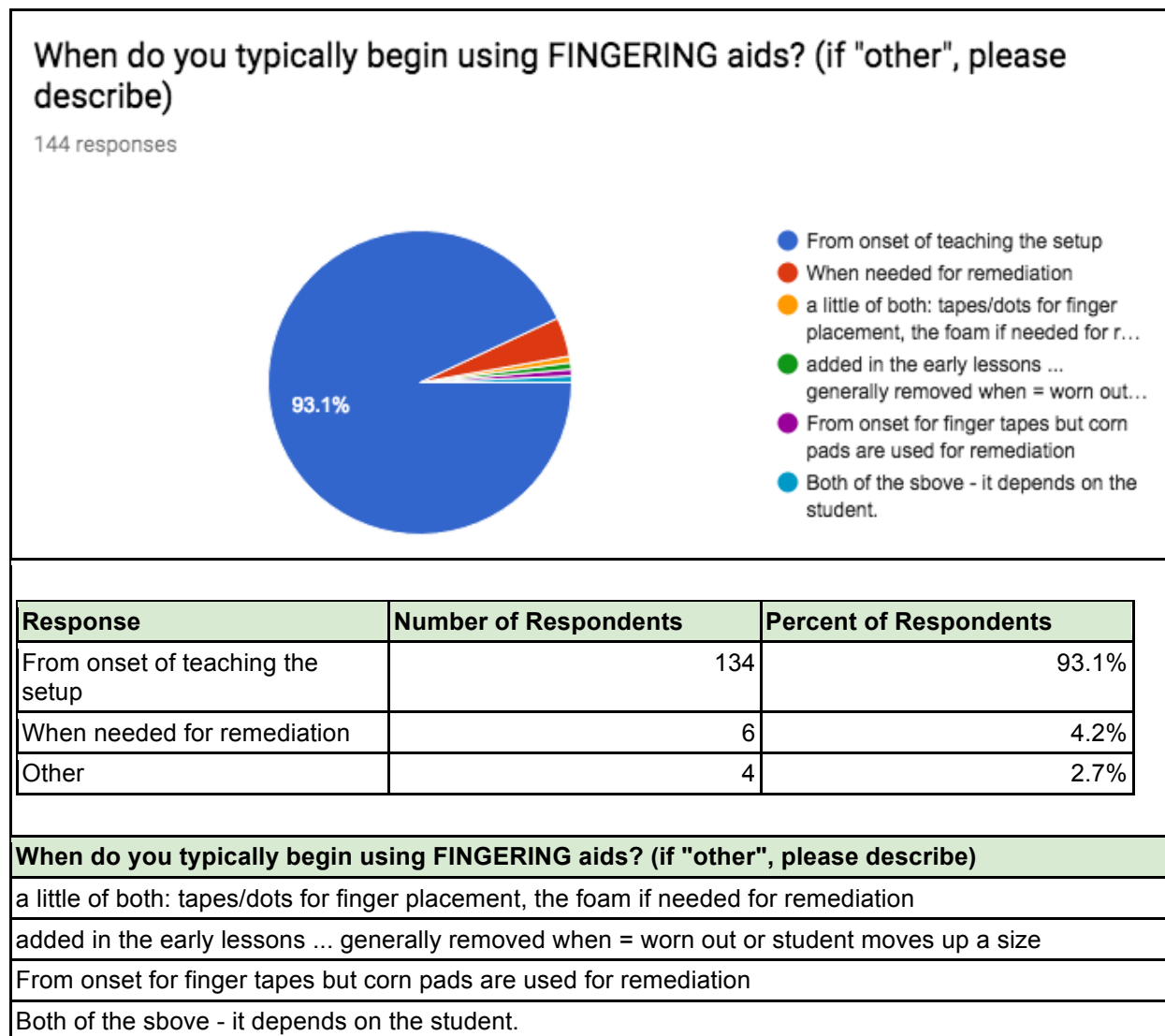


Figure D.25 - Question 25

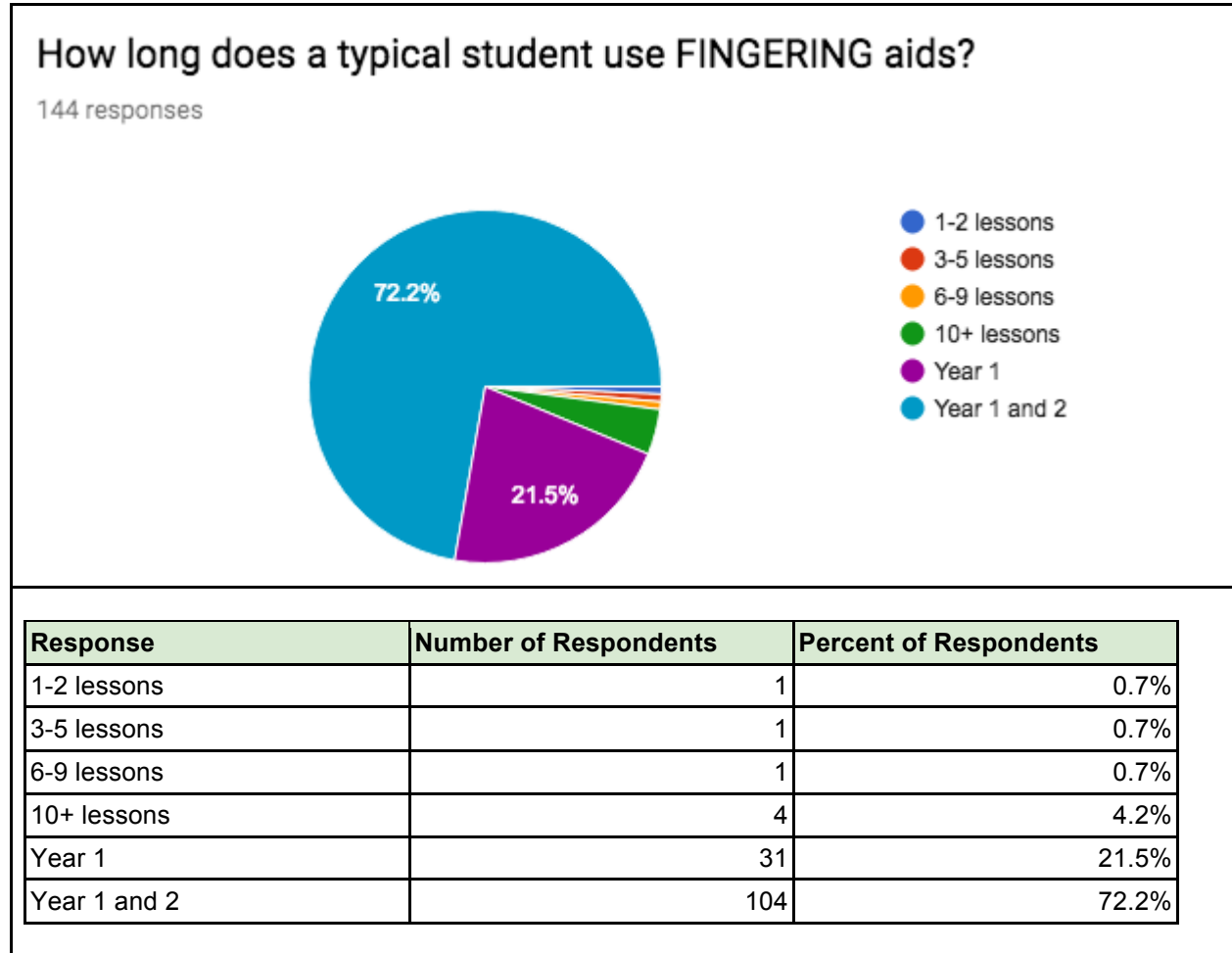


Figure D.26 - Question 26

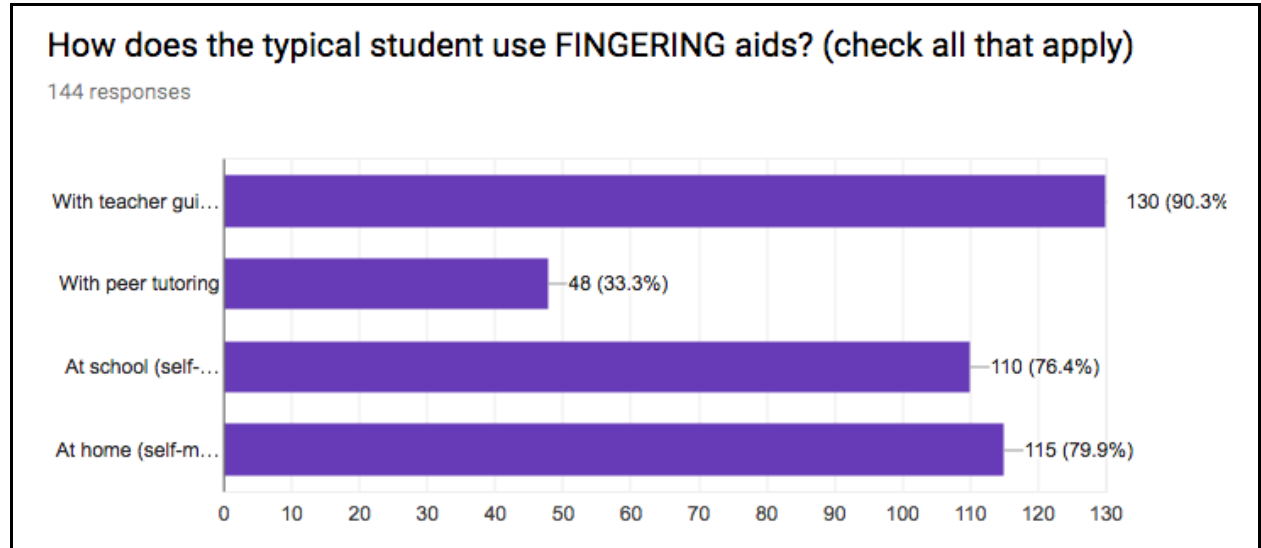


Figure D.27 - Question 27

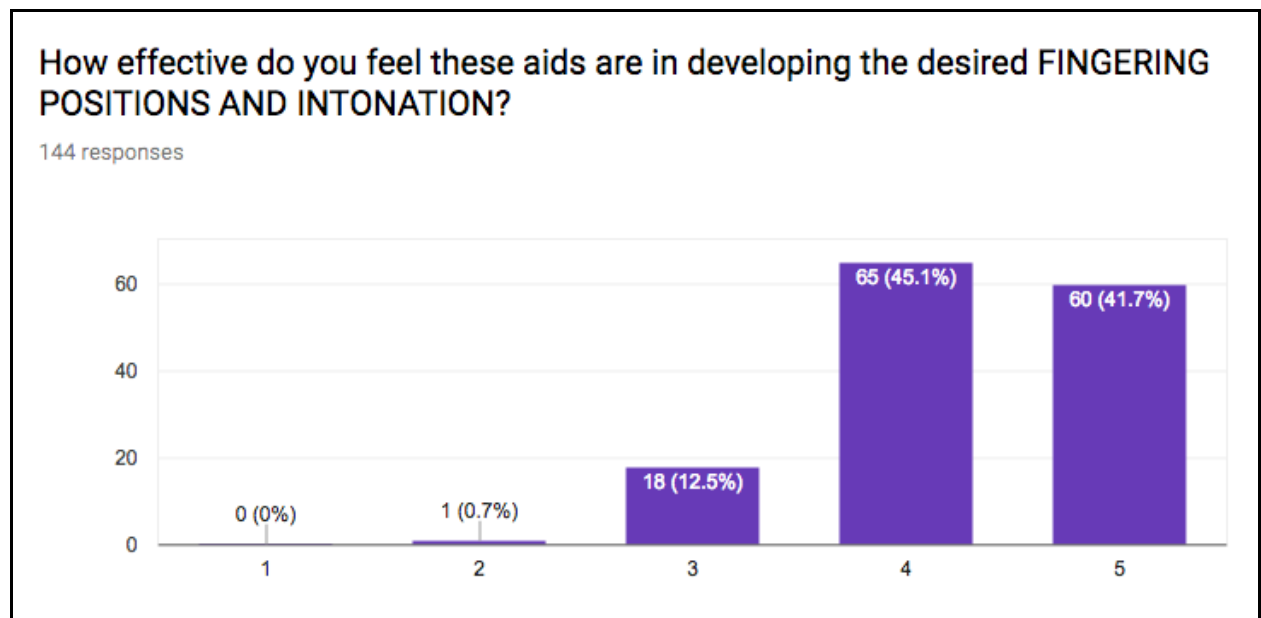
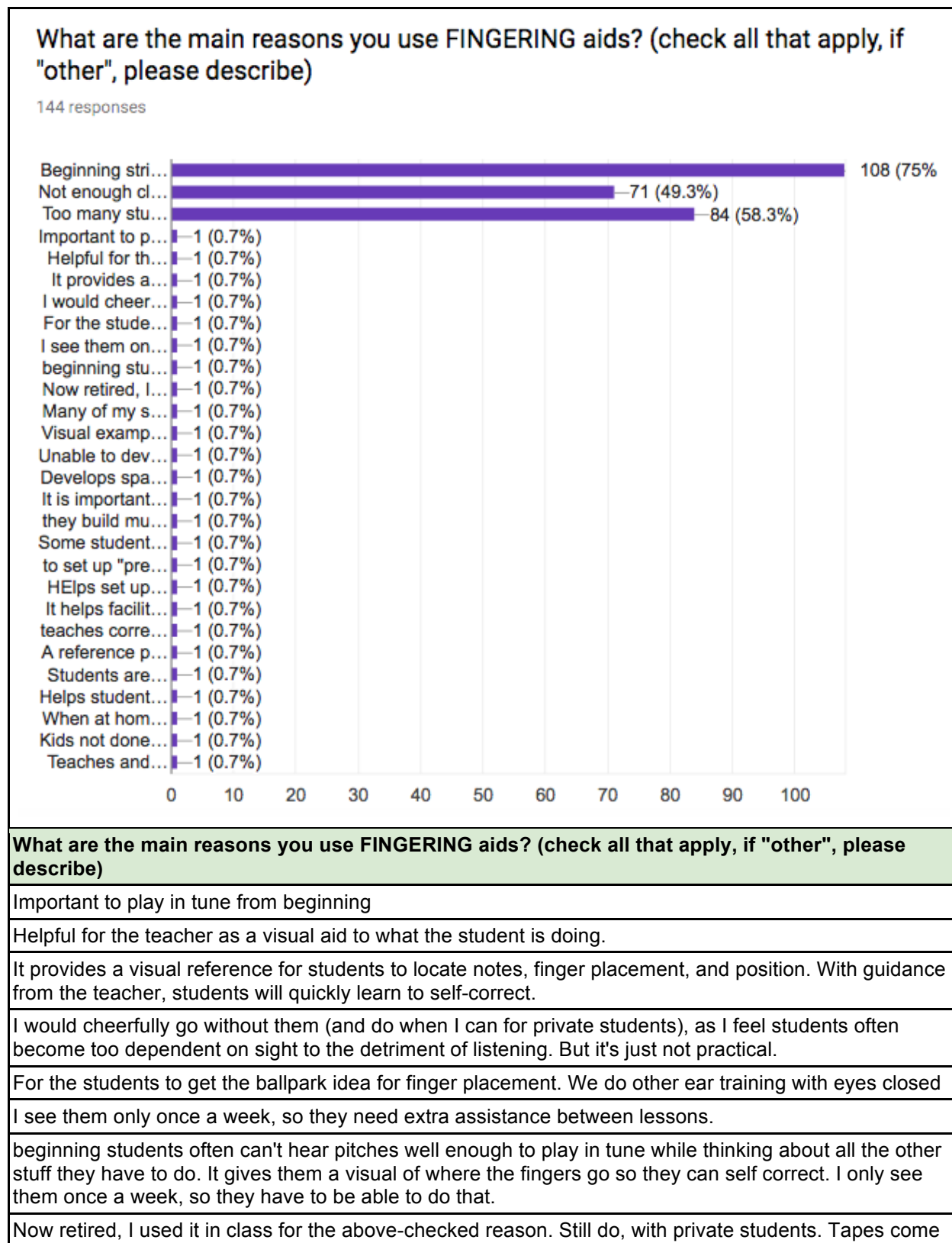


Figure D.28 - Question 28



off starting at 1 year, and 1 is left on for 3rd position for a short while
Many of my students have underdeveloped fine-motor skills -- tapes give them a target they can narrow in on visually as they develop the aural skills to hear and correct intonation.
Visual example of finger patterns/ whole and half step spacing on the fingerboard
Unable to devote enough time per student per week to develop it by ear.
Develops spacing for hand frame, provides visual reference before aural skills developed
It is important for students to hear correct pitches from day 1. Tapes help guide them toward correct pitch at a time when they are trying to manage multiple technical and aural skills.
they build muscle memory
Some students need tactual or visual aides.
to set up "pre-professional left and position
HElps set up good left hand form
It helps facilitate where the hand should be when beginning the violin.
teaches correct left hand frame and develops muscle memory
A reference point when they are practicing on their own.
Students are visual.
Helps student train correct muscle memory and intonation in the week between lessons.
When at home practicing, gives guidance
Kids not done growing. Tapes help finger placement for growing kids. Especially in 7th
Teaches and reinforces finger memory in while and half steos.

Figure D.29 - Question 29

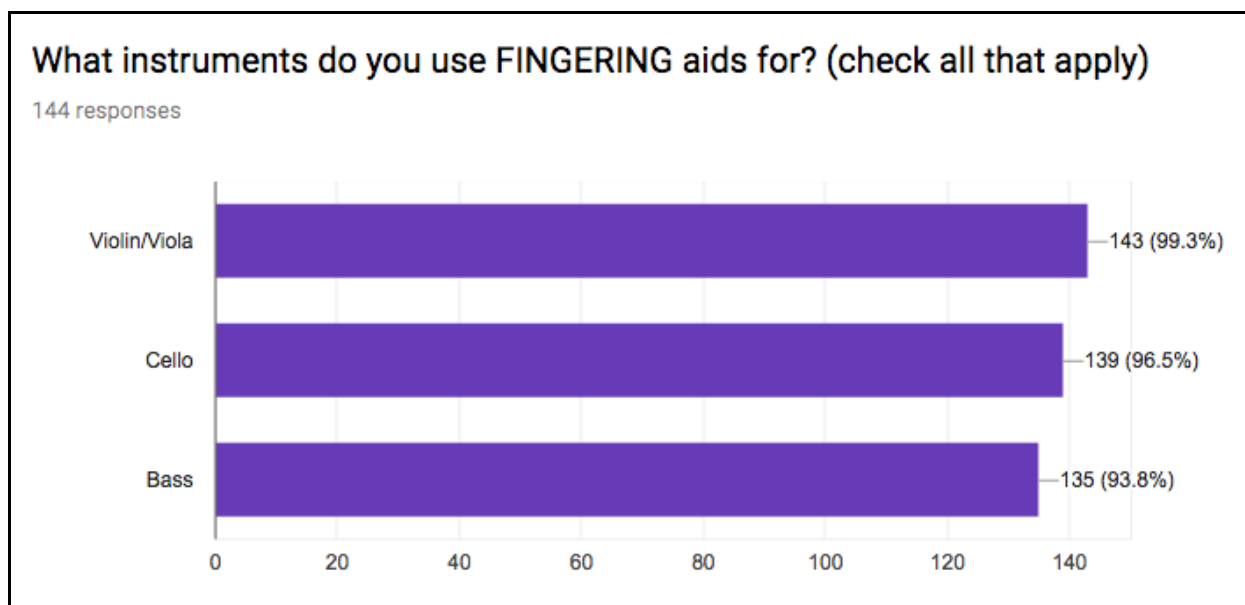
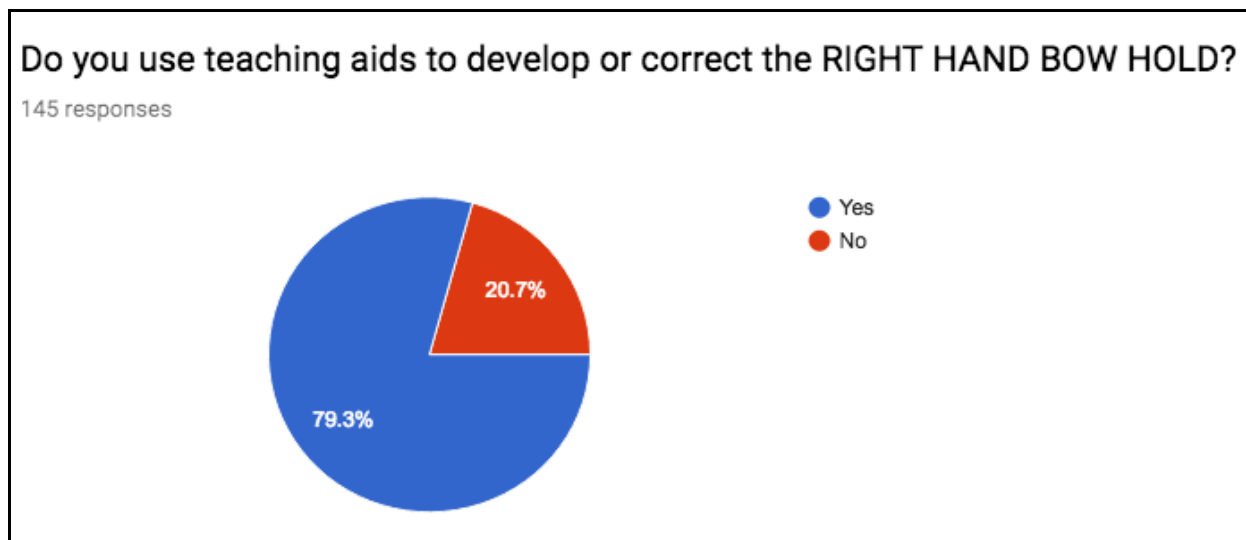


Figure D.30 - Question 30

If you use different FINGERING aids for specific instruments or situations, please describe:
use the same
Thumb sticker on back of neck for cello/bass
Used for all the above instruments, I now just teach violin and viola privately
Cello and bass thumb moleskin on the neck where 2nd finger goes
All students get black fingering tapes to start out with. If students confuse which fingers go where, one finger (decided with student) is swapped to red, white, blue, or some other color. If students still confuse fingers, colored tapes are the next step (one color per finger). If students are still confusing fingers, color coded stickers for nails of each finger and color coding music to match music are also used (these last two modifications are generally used for students with IEPs that indicate student needs additional help with decoding or reading material).
Velcro for thumbs only as necessary, more frequently on cello
Detailing tape for all (red, white, blue). Remove most/all tapes during 3rd year of 1x a week ES classes.
I use stickers on the side of the cello and bass as well as across the fingerboard so students can maintain good posture but still see the finger placement.
position of magic X changes for cello/bass - goes on the pad of the thumb
Tapes for all instruments, corn pads for cello and bass thumb position.
First and third finger for chin instruments. 1, 3, and 4 for cello. Color coded tape for basses to correspond with where 1st finger goes in different positions. I highlight music to correspond to the colors.
I use red fingering tape for violins, and gold fingering tape for violas, so I can easily tell the difference between the two types of instruments.
I prefer small round stickers to tapes, but my colleagues like tapes. So I cooperate.

RIGHT HAND BOW HOLD TEACHING AIDS

Figure D.31



Response	Number of Respondents	Percent of Respondents
Yes	115	79.3%
No	30	20.7%

Figure D.32

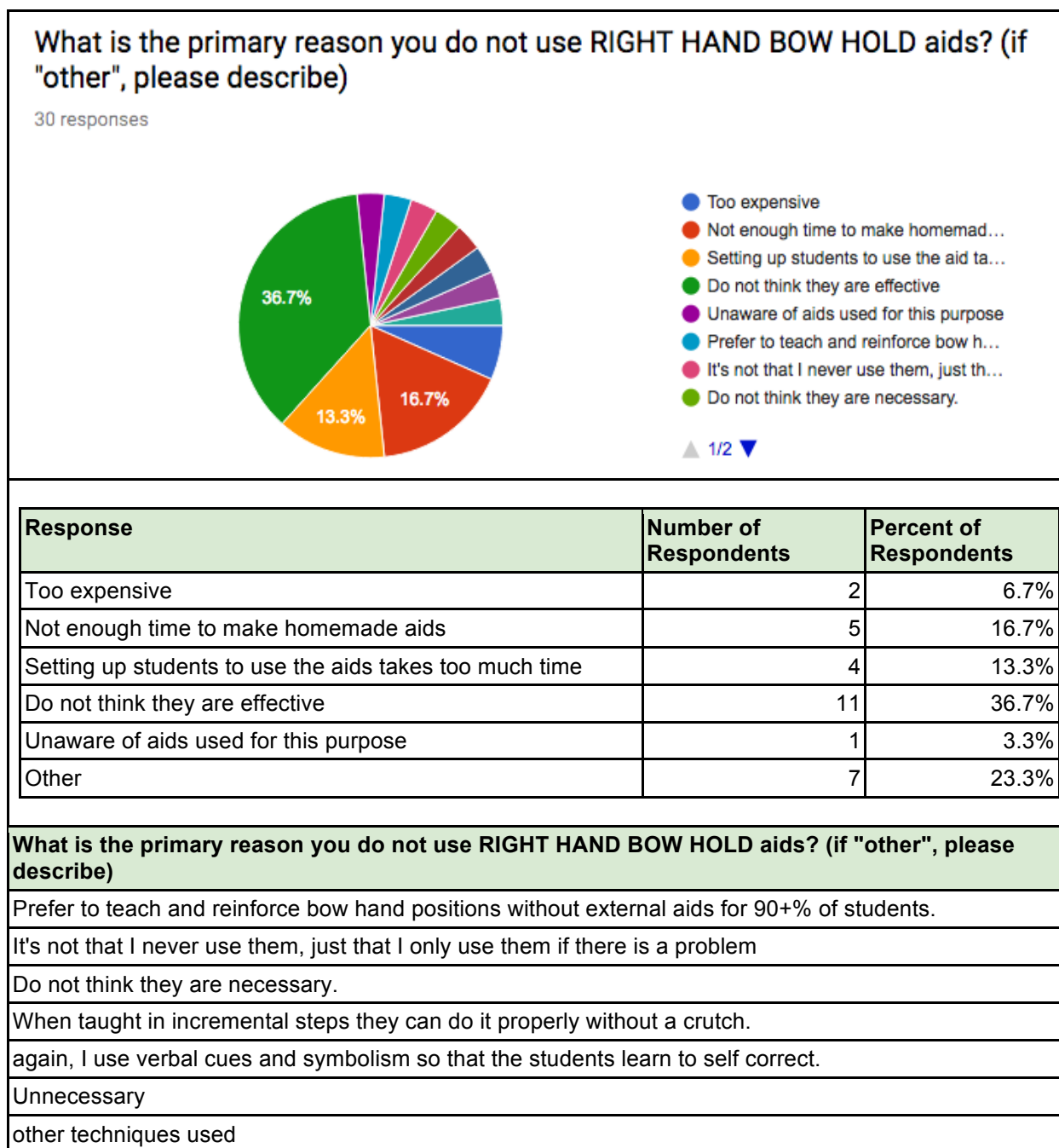


Figure D.33

Note that “other” responses from survey Question 33 will be shown with full text in the table for survey Question 34 (see figure D.34).

What teaching aids do you use with beginning strings students to develop or correct the BOW HOLD? (check all that you use, if "other", please give a descriptive name)	Number of Respondents	Percent of Respondents
Things 4 Strings Bow Hold Buddies - Frog (commercial product)	14	12.2%
Things 4 Strings Bow Hold Buddies - Hold Fish (commercial product)	12	10.4%
Things 4 Strings Bow Hold Buddies - Cellophant (commercial product)	16	13.9%
L'MS Snail Bow Hold Grip (commercial product)	0	0.0%
Super-Sensitive Bowmaster (commercial product)	4	3.5%
AcoustaGrip Bow Grip (commercial product)	0	0.0%
Stringvision Bow Grip (commercial product)	6	5.2%
Pinkinest (commercial product)	1	0.9%
Bow-Nuts Donuts (commercial product)	2	1.7%
Pencil	91	79.1%
Dowel Rod	32	27.8%
PVC Pipe	18	15.7%
Pinky nest (masking tape)	24	20.9%
Corn cushions	41	35.7%
Bow “tattoos” (marker dots on hand to show contact points)	39	33.9%
Other	35	30.4%

Figure D.34

Note that the table below includes all the “other” responses from survey Question 33 (see figure D.33 above) as well as the responses from survey Question 34. Because the respondents were allowed to choose multiple teaching aids, I have used bold face to designate a teaching aid that was entered using “Other”. Some of the comments from Question 34 relate back to the listed teaching aids as well as their “Other” response. (Note that for clarity, I have combined the responses for “Other” from Question 33 with the respective comments from the respondents in Question 34.)

What teaching aids do you use with beginning strings students to develop or correct the BOW HOLD? (check all that you use, if "other", please give a descriptive name)	If you chose "other" to list a homemade BOW HOLD aid, please describe the device and how it is used.	Keywords
children set bow hand using hand games.	I use a "bow panda" (my idea - our school mascot is the panda) which is bow hand without the bow. Cello/bass are a little different, but all my students start on the violin. The switch to cello/bass bow hand isn't difficult for them.	bow hand games
Pencil, Dowel Rod, PVC Pipe, Llama song	Llama helps set hand shape without any manipulative. Song on you tube is fun and reinforces the correct finger positions.	bow hand games
I make special grips for students with physical disabilities		disability
Pencil, Bow "tattoos" (marker dots on hand to show contact points), Stickers	Frog stickers over the eye of the frog to guide placement of 2nd/3rd fingers (and remind of the name of the frog!)	finger position markers
Pencil, Dowel Rod, Stickers		finger position markers
Stringvision Bow Grip (commercial product), Corn cushions, Mole skin	Mole skin like bow tattoos. Finger markers for the right hand.	finger position markers
Pencil, Dowel Rod, PVC Pipe, Fedget bow hold guide (commercial)		other
Pencil, Dowel Rod, toilet paper tube, drinking straws,	I also use silicone sticky fingertips on the bow stick when absolutely necessary	other
Things 4 Strings Bow Hold Buddies - Cellophant (commercial product), Pencil, Dowel Rod, Corn cushions, Bow "tattoos" (marker dots on hand to show contact points), elastomer		other
Pencil, Corn cushions, Bow "tattoos" (marker dots on hand to show contact points), Wooden skewer	I stole the wooden skewer idea from Gabe Villasurda and like it better than a pencil for beginning vln/vla because you can fit the skewer just behind the pinky nail and really feel the concept of the pinky on top of the stick.	pencil sub
Pencil, Corn cushions, Bow "tattoos" (marker dots on hand to show contact points), First the TIME devoted to just learning to hold the bow upside down and explore the weight and balance is hard to find but very effective . Just discovered that a small piece of t skinny tape to mark the facet of the bow where the pinkie should land seems to help a lot.	as above.. also have seen clever " bow nest?" with regular old rubber bands, but i'm not sure how to install it? Especially for cello .. I think you need to take the frog off to install?	pinky marker

I make pinky nests with plumber's tubing.		pinky nest
Pencil, Bow seat belts from rubber bands	http://m.youtube.com/watch?v=GcQQUGz_X5k	pinky nest
Pencil, Dowel Rod, PVC Pipe, Rubber band around frog	Rubber band goes through notch in frog and around tension screw. Student inserts ring finger under it and uses the place where rubber band crosses as a guide for the pinky.	pinky nest
Pencil, Pinky nest (masking tape), rubber bands and tubing for pinky nest	Rubberband is wrapped around the frog: students place ring finger in the rubber band to keep it around the frog instead of on top of the stick. Pinky nest made from vinyl tubing: cut into one inch length, cut slits to fit over frog, like the commercial ones. Adhere with electrical tape.	pinky nest
PVC Pipe, Corn cushions, Colored tapes for bow distribution, pencil grips for pinky holders	Bows taped green and red where elbow makes right angle for beginning bow rhythms. Pencil grip cut and placed slightly over frog for pinky crib. Moleskin between frog and winding for cello thumbs and when moving violin and viola beginner bow holds to the inside	pinky nest
Pencil, Dowel Rod, Bow "tattoos" (marker dots on hand to show contact points), Rubber bands	Rubber band is wrapped over the frog, students put finger tips under one part of the rubber band to keep fingers in touch with frog.	stabilty/touching frog
Pencil, Dowel Rod, PVC Pipe, Bow "tattoos" (marker dots on hand to show contact points)	Rubber band "seatbelt" on frog for added stability	stabilty/touching frog
Paint rollers	Used like pvc pipe	straight bowing
Pencil, Strips at balance point		straight bowing
Pencil, Toilet paper tubes and pringles cans (for basses)	Same as pvc pipe but cheaper and lighter. I do this for 1 week before we put bow on string.	straight bowing
Things 4 Strings Bow Hold Buddies - Cellophant (commercial product), Pencil, Dowel Rod, Corn cushions, Bow "tattoos" (marker dots on hand to show contact points), Paper towel tube		straight bowing
Things 4 Strings Bow Hold Buddies - Frog (commercial product), Things 4 Strings Bow Hold Buddies - Hold Fish (commercial product), Things 4 Strings Bow Hold Buddies - Cellophant (commercial product), Pencil, Dowel Rod, toilet paper roll	put on the strings between bridge and fingerboard with rubberband, then bow with dowel or "real bow"	straight bowing
Pencil, Bow "tattoos" (marker dots on	Student demonstrates bow hold on a	straw for tension

hand to show contact points), Straws; bowmate	straw.	
Pencil, Dowel Rod, PVC Pipe, Corn cushions, Straws	Practice bow hold on straw to not squeeze	straw for tension
Pencil, Pinky nest (masking tape), Bow "tattoos" (marker dots on hand to show contact points), whatever it takes	raw spaghetti or straw to help with a loose bow grip	straw for tension
Pencil, Straw		straw for tension
Straw	Make first bow gold's in a straw. If it bends use less strength.	straw for tension
Straw	Like a pencil, to practice starter bow holds. Since the straw is bendy, it lets me see if students have too tense of a bow hold.	straw for tension
Things 4 Strings Bow Hold Buddies - Cellophant (commercial product), Dowel Rod, Pinky nest (masking tape), Milk shake straw	Milk shake straw is used to make bow hold to prevent tension and squeezing	straw for tension
Things 4 Strings Bow Hold Buddies - Cellophant (commercial product), Stringvision Bow Grip (commercial product), Pencil, bendy straw: bend fully back & tape to simulate "frog"	intermediate step between pencil & bow to keep students from clenching hands	straw for tension
Bow-Nut Donuts (commercial product), Pencil, Dowel Rod	Adhesive felt for thumb and pinky placement	thumb position marker
pencil-grips	Cheap, rubbery pencil-grips from a stationery store, cut in half, lubricated with a little soap, placed on the bow for thumb positioning.	thumb position marker
Pencil, 'recycled' frog & stick from broken bows	When bows are damaged beyond repair, I have my shop teacher cut them off above the grip and use them for students to practice their bow hold before they can earn their bow license.	Trainers
Pencil, PVC Pipe, Pinky nest (masking tape), Bow "tattoos" (marker dots on hand to show contact points), Modified "junk" bow	I take "trash" bows, cut off the hair (so it's not a distraction) and add silver sharpie dots for finger placement, then let kids use these as "trainer" bows.	Trainers
Stringvision Bow Grip (commercial product), Dowel Rod, Half bows	Bottom half of bow (minus hair) to learn bow hold in mass numbers	Trainers
Things 4 Strings Bow Hold Buddies - Frog (commercial product), Things 4 Strings Bow Hold Buddies - Hold Fish (commercial product), Things 4 Strings Bow Hold Buddies - Cellophant (commercial product), Super-Sensitive Bowmaster (commercial product), Bow-Nut Donuts (commercial product), Pencil, PVC Pipe, Corn cushions, Bow "tattoos" (marker dots on hand to show contact		Trainers

points), Mini bows (broken bows cut and stickers added to aid finger placement)		
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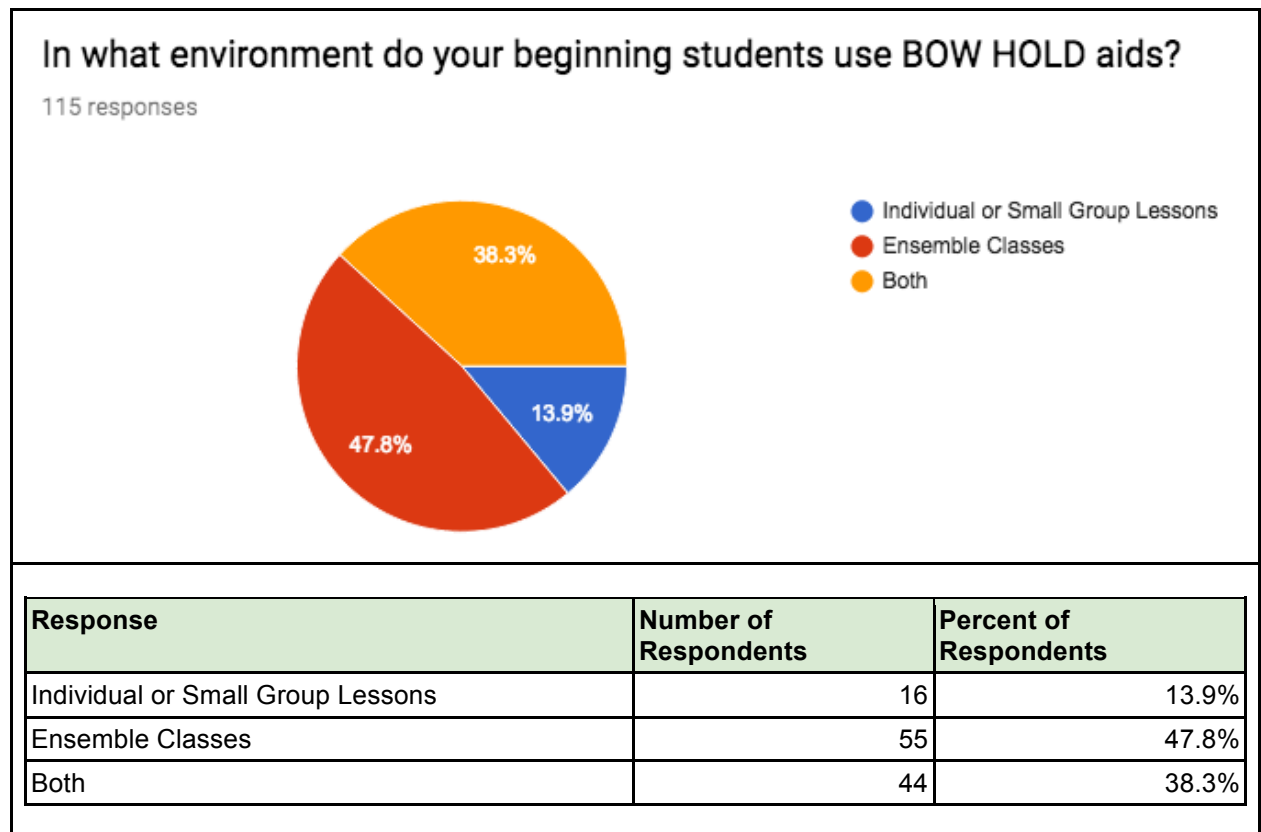
Figure D.35

Figure D.36

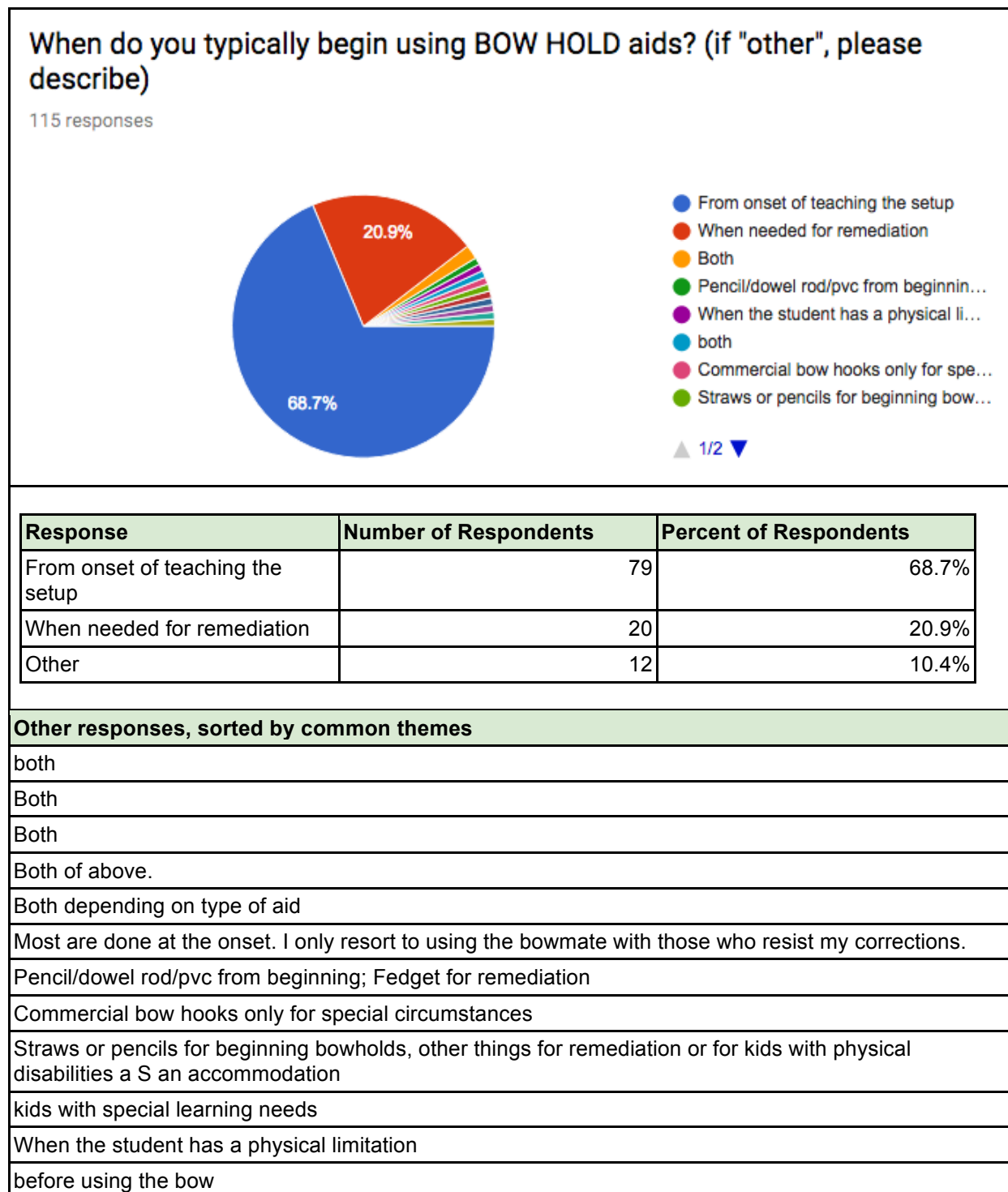


Figure D.37

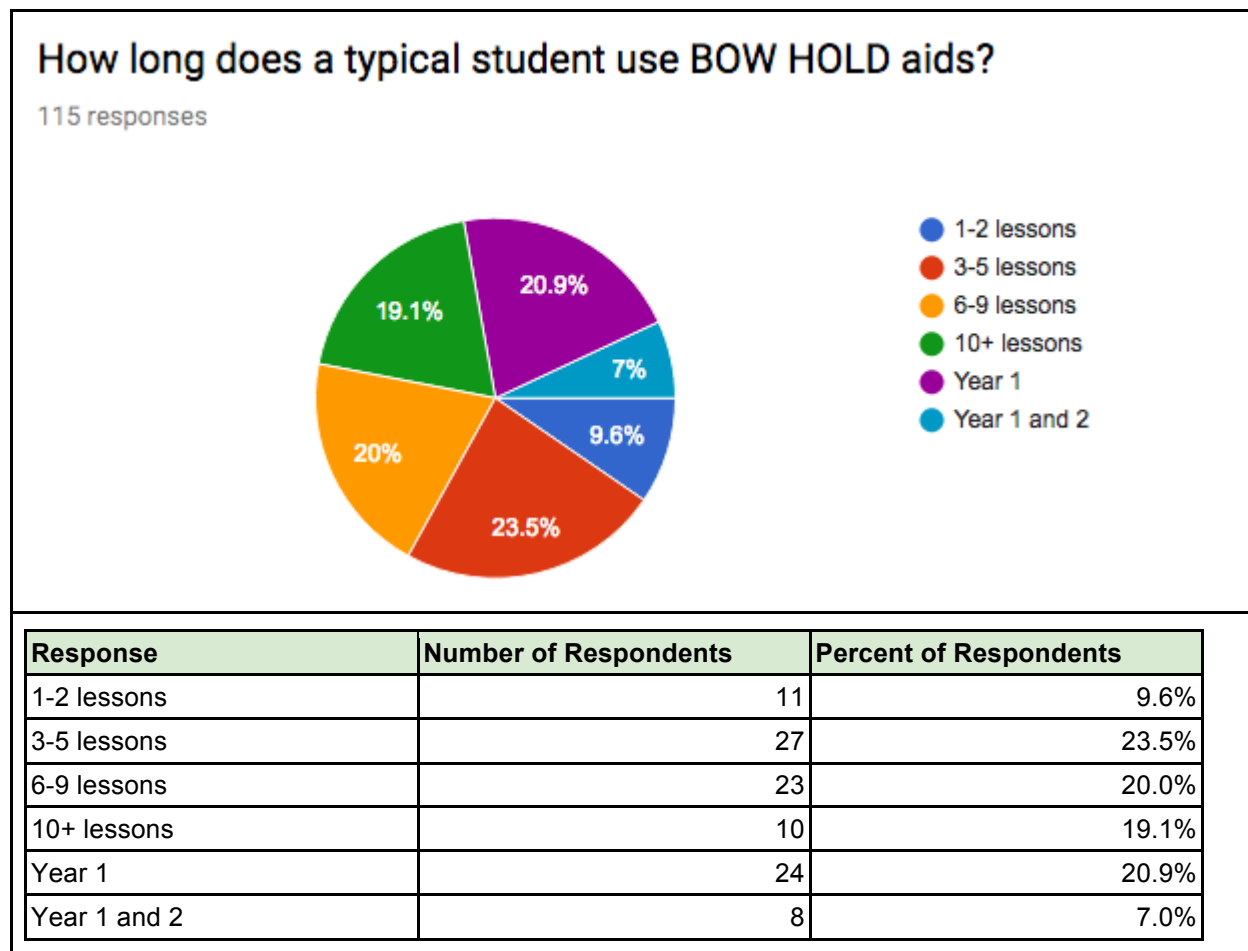


Figure D.38

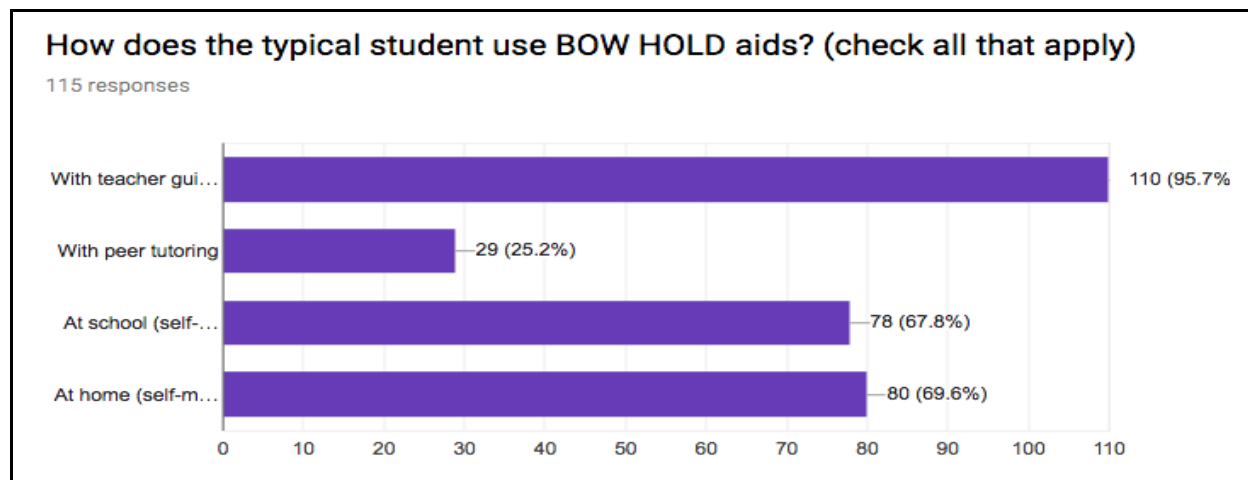


Figure D.39

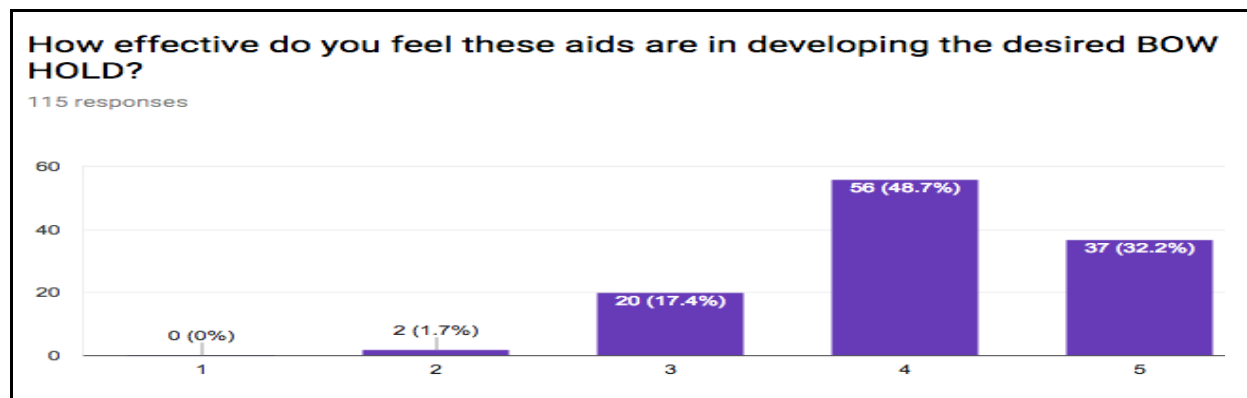
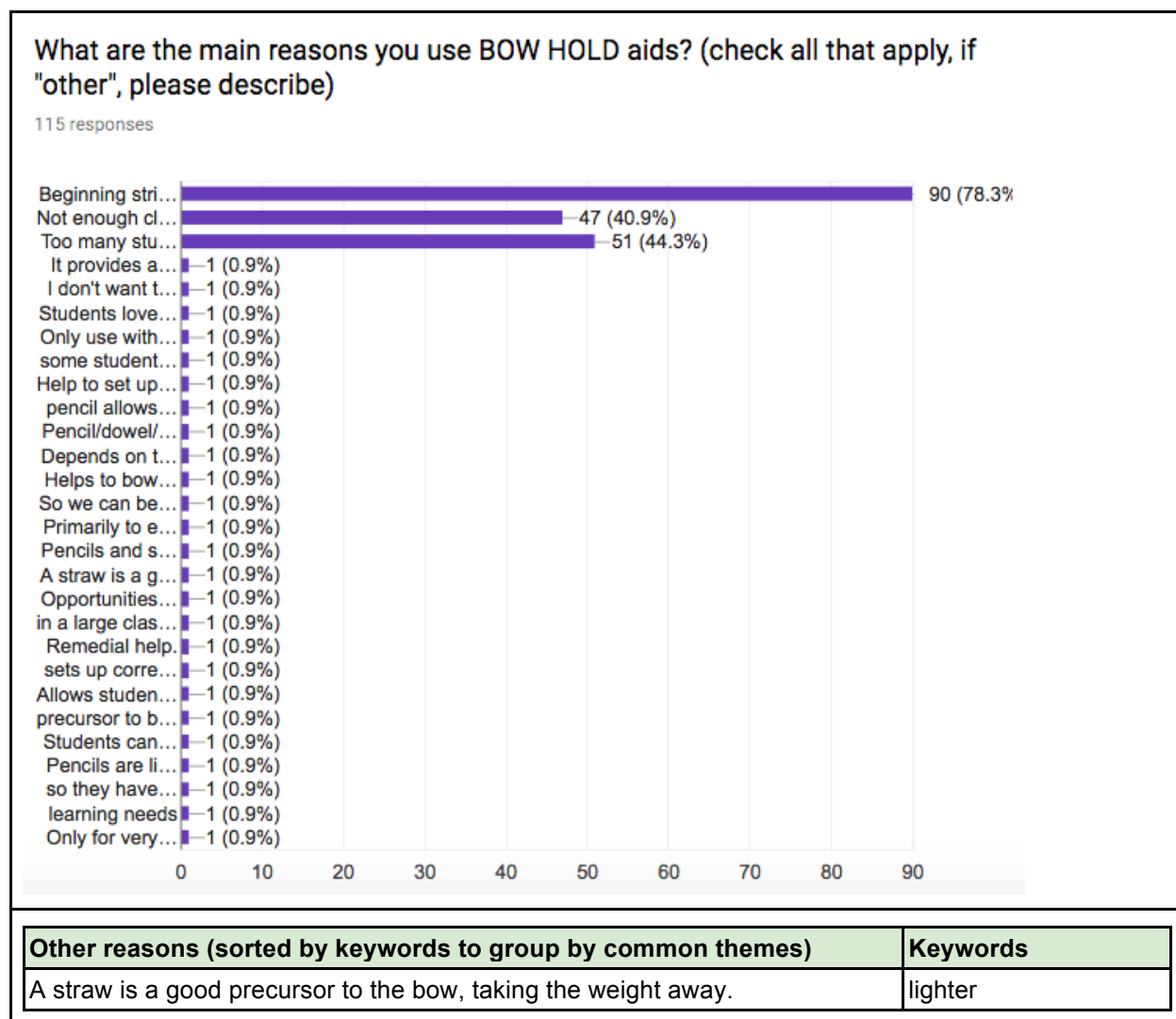


Figure D.40



Opportunities to build bowhold without balance issues or temptation to bow on the string before ready	lighter
pencil allows bow hold and bow motion practice with lighter and shorter object than the bow	lighter
pencil allows bow hold and bow motion practice with lighter and shorter object than the bow	lighter
Pencil/dowel/drawing on fingers allow students to develop the right shape before the heaviness of the bow is added. Cellophane/bow hold buddies reserved for the one or so kids per year who do not have the coordination to place the fingers correctly even with the other aids.	lighter
Pencils are lighter than bows, allows them to develop now hold without added problem of weight	lighter
Primarily to enable students to set bow hold and start developing a sense of what the bow hold should be without the awkwardness, weight, and unequal balance of the bow.	lighter
so they have something lighter than the real bow to try the bow hold with at first	lighter
Pencils and straws are good for setting up bowholds because the endurance required to hold a bow can fatigue and lead to tightened fingers	tension
some students come with lots of hand tension	tension
I don't want them to mess up their own bow, or put the bow to the string until their technique is solid, so we only work with straws, then trainer bows.	pre bow or instrument
precursor to bow	pre bow or instrument
So we can begin bow hold work before students have instruments.	pre bow or instrument
in a large class a pinkie house ensures that all students will at least start in finger placement in the over the frog without teacher reminders, saving time.	finger placement
sets up correct bow hand position	finger placement
Help to set up expectations for actual bow	expectations
It provides a good starting point for students to begin to understand and maintain proper bow technique.	expectations
learning needs	disable
Only use with disabled students	disable
Depends on those who need it	other
Only for very young students	other
Remedial help.	other
Students can practice without my help.	other
Students love them and say they help.	other
Allows students to have immediate success pulling a straight bow & get the correct feel of pull/push motion [NOTE - this respondent who had indicated they used toilet paper tubes and pringles cans seemed to be referring to teaching aids for straight bowing]	straight
Helps to bow straight across the string [NOTE - this respondent who had indicated they used paint rollers seemed to be referring to teaching aids for straight bowing]	straight

Figure D.41

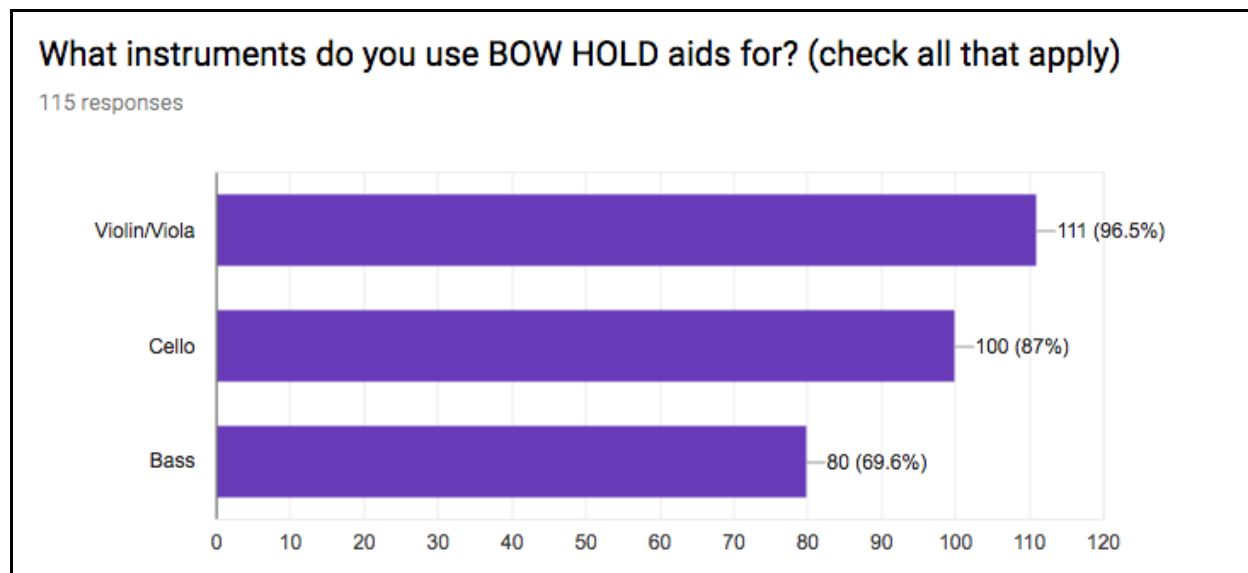


Figure D.42

If you use different BOW HOLD aids for specific instruments or situations, please describe:
Need more ideas for bass
Does not apply as effectively to German bow
All beginners use pencil/dowel/drawing on fingers to help develop the proper shape with a lighter weight. I have only used the bowhold buddies for non-beginner remediation in rare cases--extreme coordination difficulty, or move-in students with poor setup from their previous school.
Doubled-up fat rubber bands for cello and basses, when I taught in school. It made it easier to place the thumb, having a flexible knuckle
Occasionally I use the elephant bow thing for cellos for students who are really struggling however it is very expensive and therefore not for general classroom use. I have often started cellists at the balance point of the bow to begin the bow hold (works well) or have give them a small bow (ie if they play a 1/2 cello I give them a 1/4 or 1/8 bow) this also works well. I teach the German bow hold for the bass as I think this is by far the easiest way to get a good sound at the beginning stages.
Pencil for all, but cellophant and bow tattoos when needed.
Obviously no pinky nest for cello, but placing pinky in rubber band helps keep their position from slipping. I also cut a pool noodle to slide on the cello bow to give them a feeling of keeping their hand round.
As student progress to low string instruments, we are not using bow panda, but have modified the violin bow hand by placing thumb, fingers and pinkie in different place. They seem to understand.
Cellophant is used for remediation or when a beginner is having problems.
pinkie "spot" is on the frog rather than on top of the bow for cello/bass
I don't like the cellophant for my students. Too heavy. They only use a pencil. Same with bass.
All students use PVC Pipe, use the pinky house for those that need it,
For basses, I use pringles cans. They're large enough to get bow through - unlike toilet paper tubes. [NOTE - this teacher is discussing straight bowing, which is addressed in a different area of the survey]

RIGHT HAND STRAIGHT BOWING TEACHING AIDS

Figure D.43

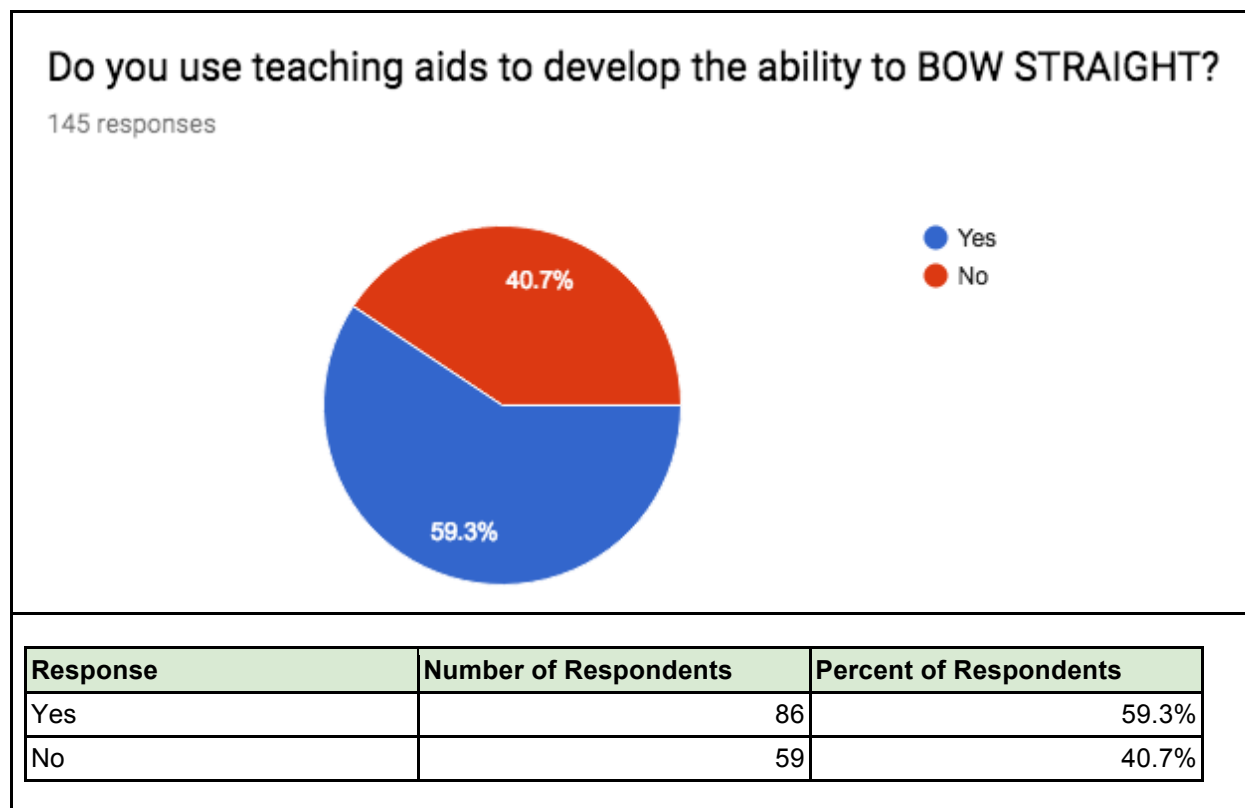
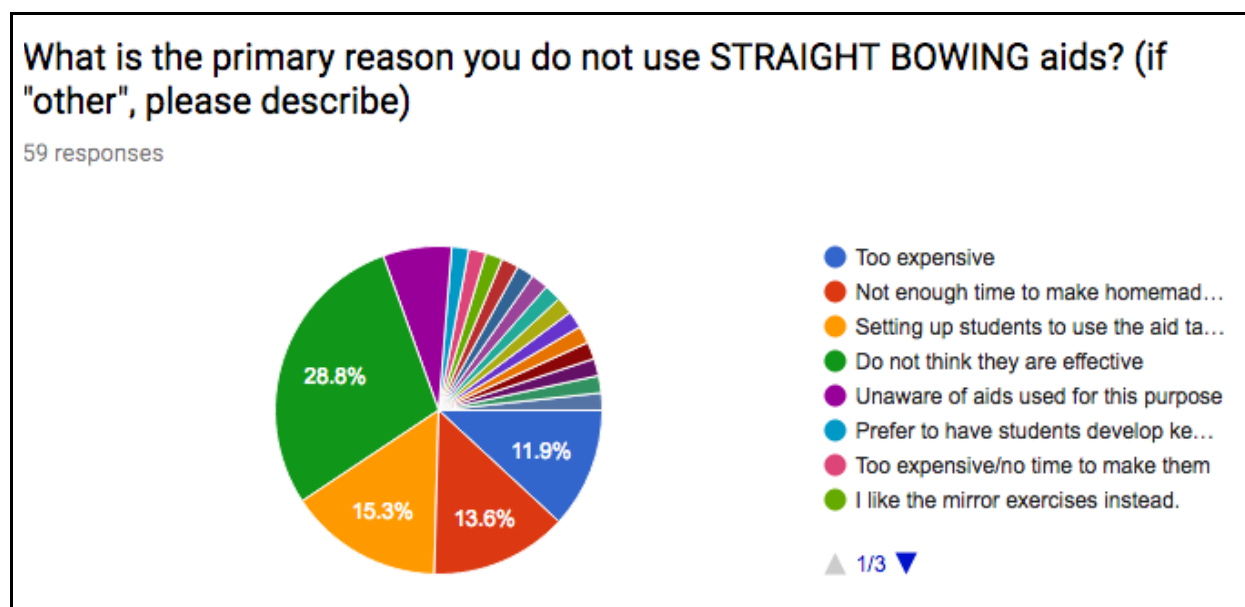


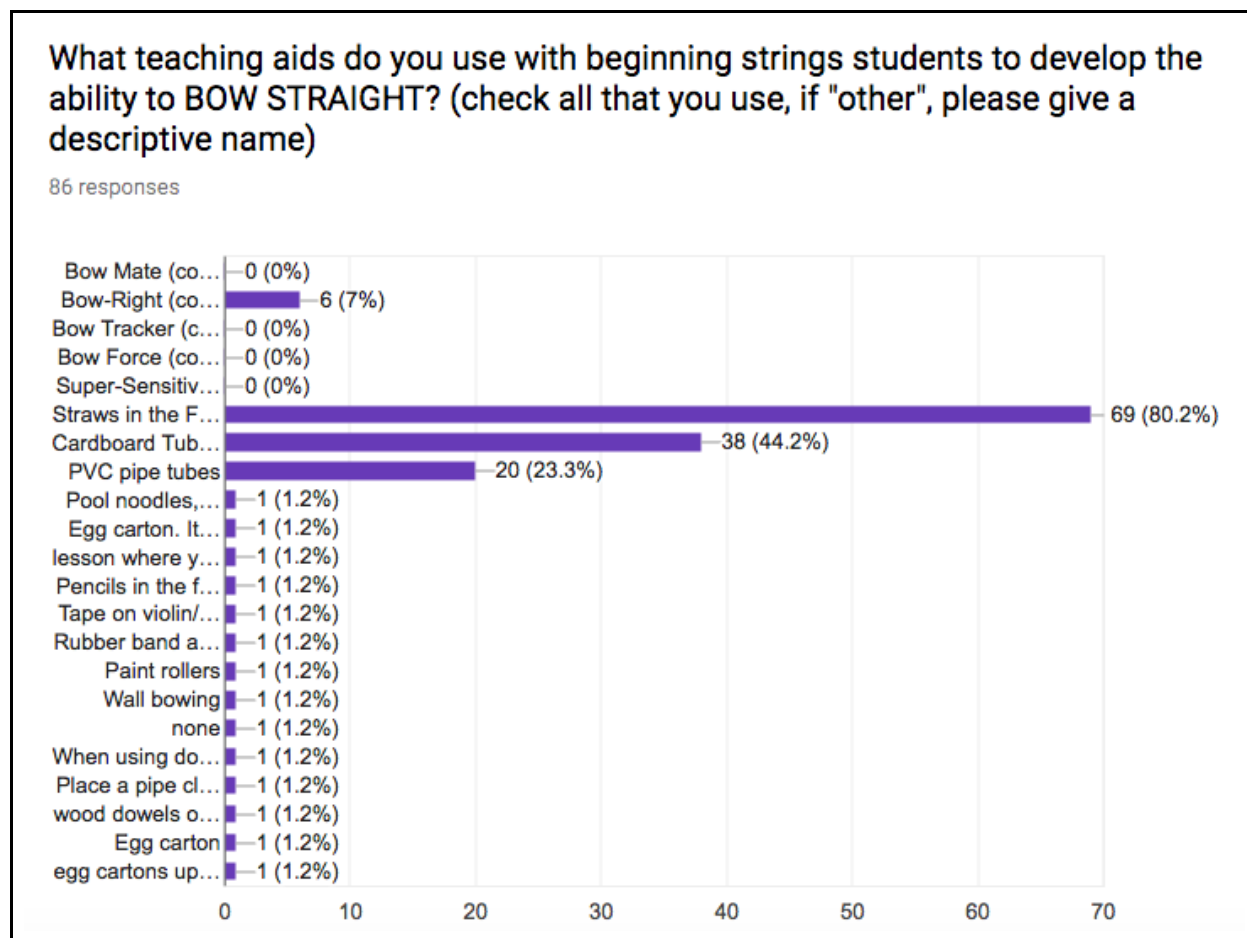
Figure D.44



Response	Number of Respondents	Percent of Respondents
Too expensive	7	11.9%
Not enough time to make homemade aids	8	13.6%
Setting up students to use the aids takes too much time	9	15.3%
Do not think they are effective	17	28.8%
Unaware of aids used for this purpose	4	6.8%
Other	14	23.6%
Other responses (sorted by common idea, not in chronological order)		
Teach correct technique results in not needing guides.		
Do not see the need as my teaching bowing is quite effective and the students pick up quickly enough.		
I have effective ways to do without.		
Not needed if taught correctly		
Had students who had them, and they didn't work. Better to show them other ways, and have them do detache, for ex, by putting upper arm against the wall so whole arm won't move.		
I have used straws/paper in the holes but again I do not use them unless a problem develops that will not correct itself		
I like the mirror exercises instead.		
I use verbal cues		
other techniques used		
Prefer to have students develop keeping the bow straight by themselves. I think it is best to develop independent bow contro from the beginning. Suzuki bow exercises are extremely beneficial.		
Prefer to teach straight bowing kinesthetically and aurally (get the best sound when it's straight).		
Teach the gross motor motion and they don't need the aid		
Too expensive/no time to make them		
Set up takes more class time than it is worth.		

Figure D.45

Note that only partial text for the “other” responses from Question 45 is shown in the table below, but will be shown with full text in the table for Question 46 (see figure D.46).

**Figure D.46**

Note that the table below includes all the “other” responses from Question 45 (see figure D.45 above) as well as the responses from Question 46. Because the respondents were allowed to choose multiple teaching aids, I have used bold face to designate a teaching aid that was entered using “Other”. Some of the comments from Question 46 relate back to the listed teaching aids as well as their “Other” response. (Note that for clarity, I have combined the responses for “Other” from Question 45 with the respective comments from the respondents in Question 46.)

What teaching aids do you use with beginning strings students to develop the ability to BOW STRAIGHT? (check all that you use, if "other", please give a descriptive name)	If you chose "other" to list a homemade STRAIGHT BOWING aid, please describe the device and how it is used.
Straws in the F holes, PVC pipe tubes, Pool noodles, sliced into long thin strips for cello and bass f holes	Pool noodles are sliced and used in f holes for cellos as basses (like straws for violin/viola)
Straws in the F holes, Cardboard Tubes, PVC pipe tubes, Place a pipe cleaner into f holes. The pipe cleaner lays on top of the violin. The students self-monitor to see if bow is always above pipe cleaner.	
Straws in the F holes, wood dowels or pencils in F holes	use just like straws in the f holes
Pencils in the f holes.	Same as straws in the f holes.
PVC pipe tubes, Rubber band and popsicle stick	Large rubber band tied around the C bout with a second rubber band. Popsicle stick inserted in the tied rubber band. Knot can be moved to E string or G string side.
Egg carton. It goes on the shoulder upside down and students now between the eggs.	See above.
Cardboard Tubes, Egg carton	Egg cartons help with keeping the bow in one lane.
Cardboard Tubes, PVC pipe tubes, egg cartons upside down. The violins put it on their shoulder as a better simulation of where the bow actually goes in relationship to their body.	
none	I cut post it tape and put it across the f- holes. I make it the same color as the middle dot on the bow (a 1/4 inch round sticker) or at the balance point for cello and bass. That way I can say "keep the greens together" .
Tape on violin/viola in between bridge and fingerboard	
Straws in the F holes, lesson where you must position your upper arm against a wall and play only in the upper half of the bow	Also need repertoire/ etude/ suitable piece preferably from memory so you can use any available wall spot with out worry about seeing the music!
Straws in the F holes, Cardboard Tubes, PVC pipe tubes, Wall bowing	Students put tricep against wall to feel opening and closing elbow only
When using dowel rods placed on the shoulder or leg for cello/bass students get the feel for bowing straight using elbow not shoulder	
PVC pipe tubes, Paint rollers	Used like pvc pipe

Figure D.47

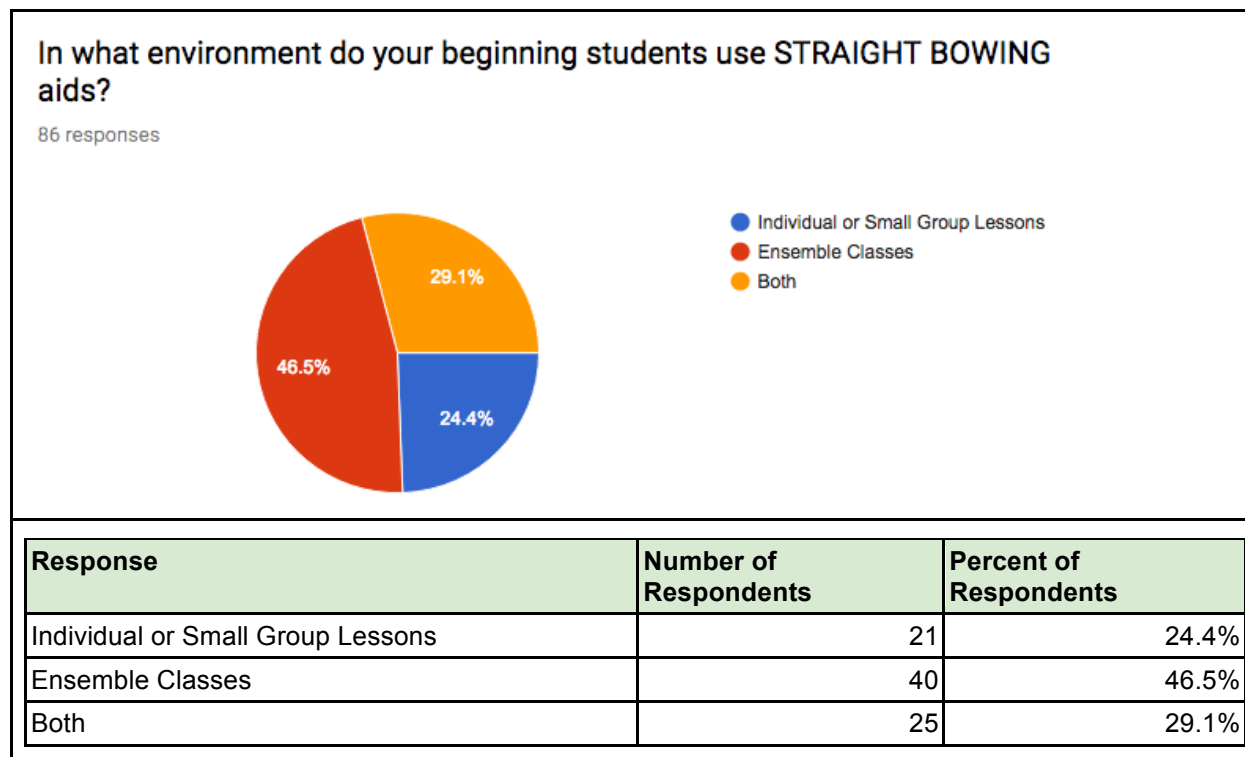


Figure D.48

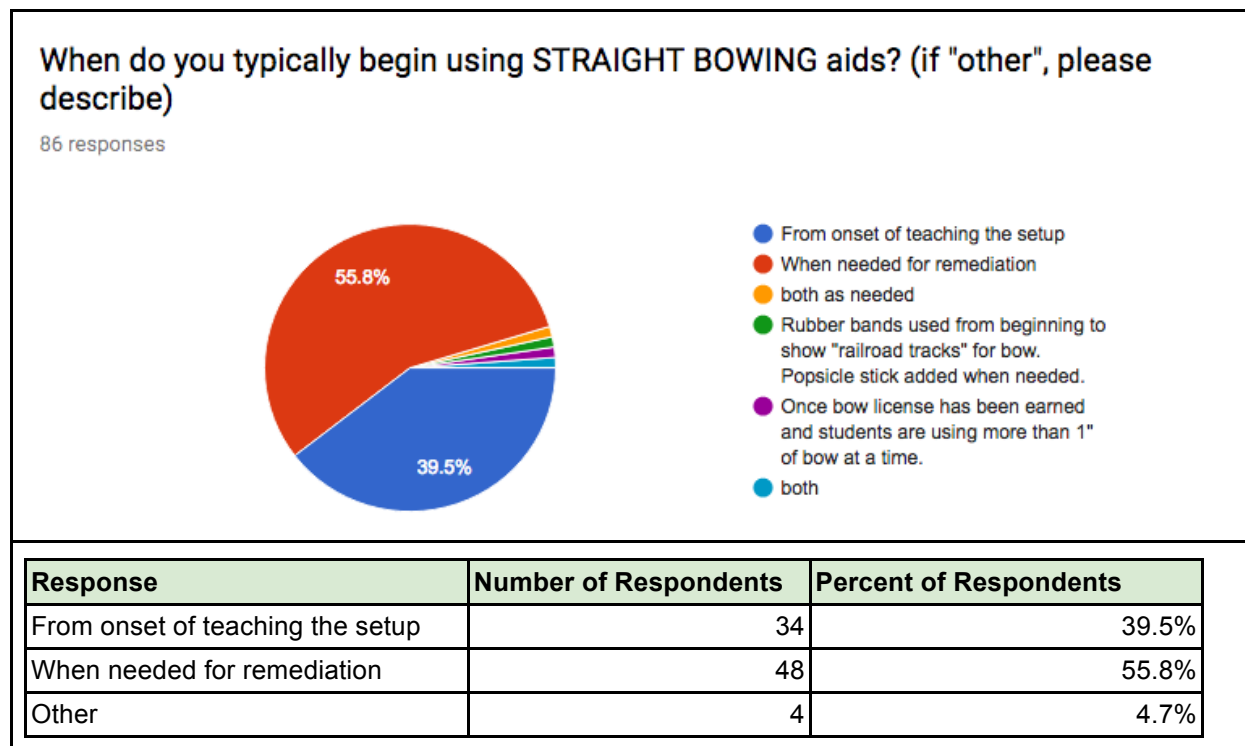


Figure D.49

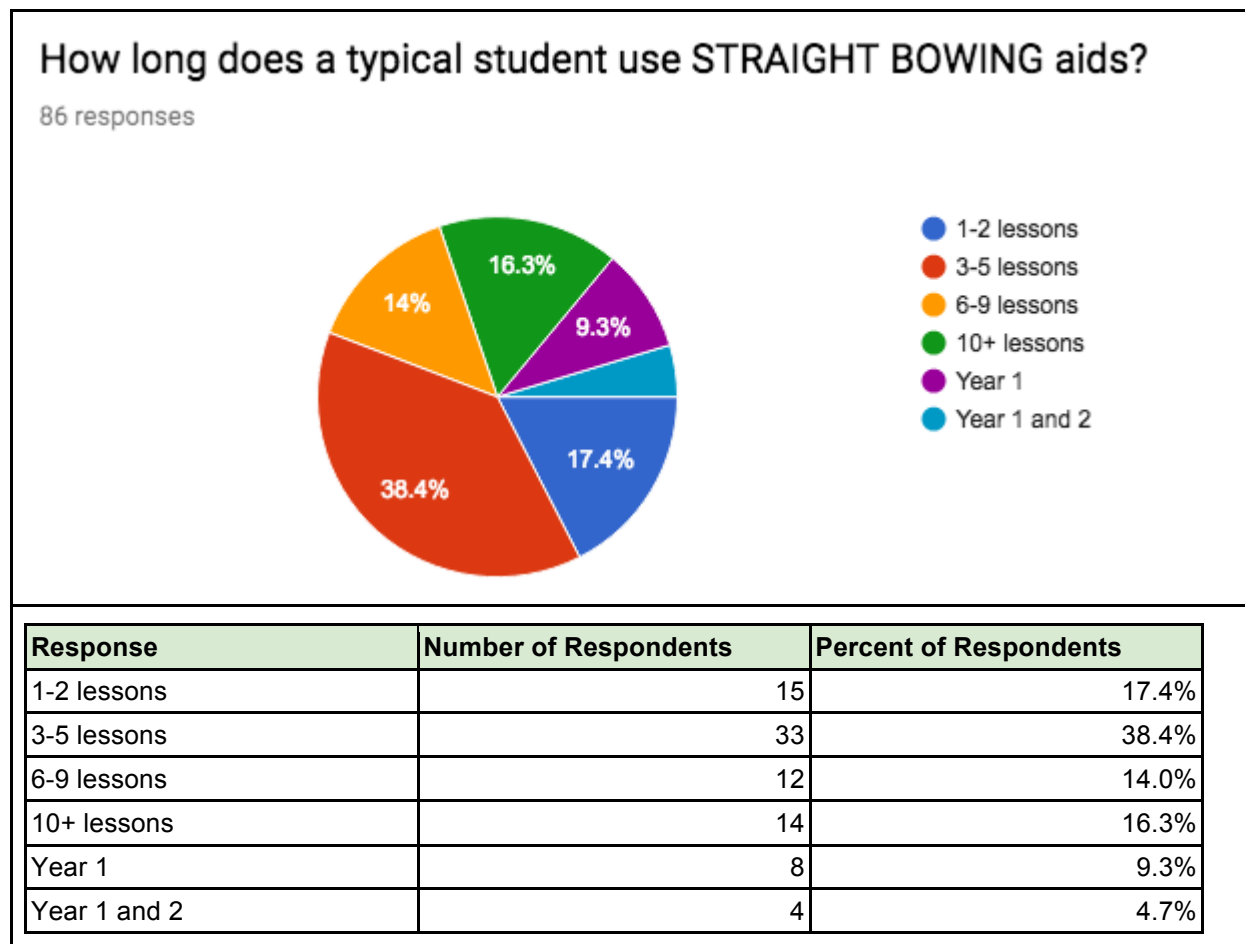


Figure D.50

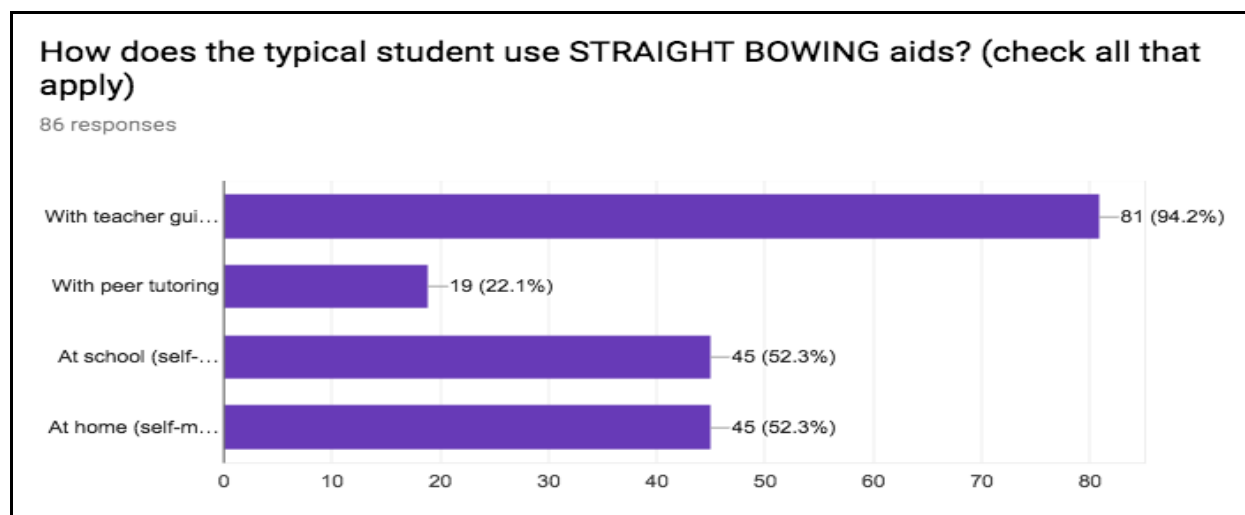


Figure D.51

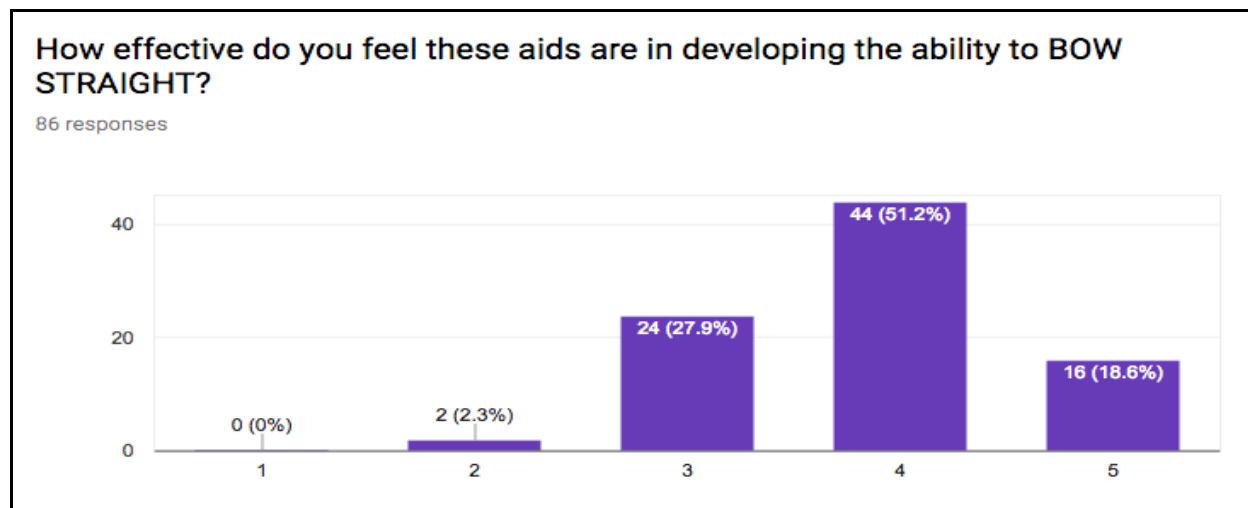
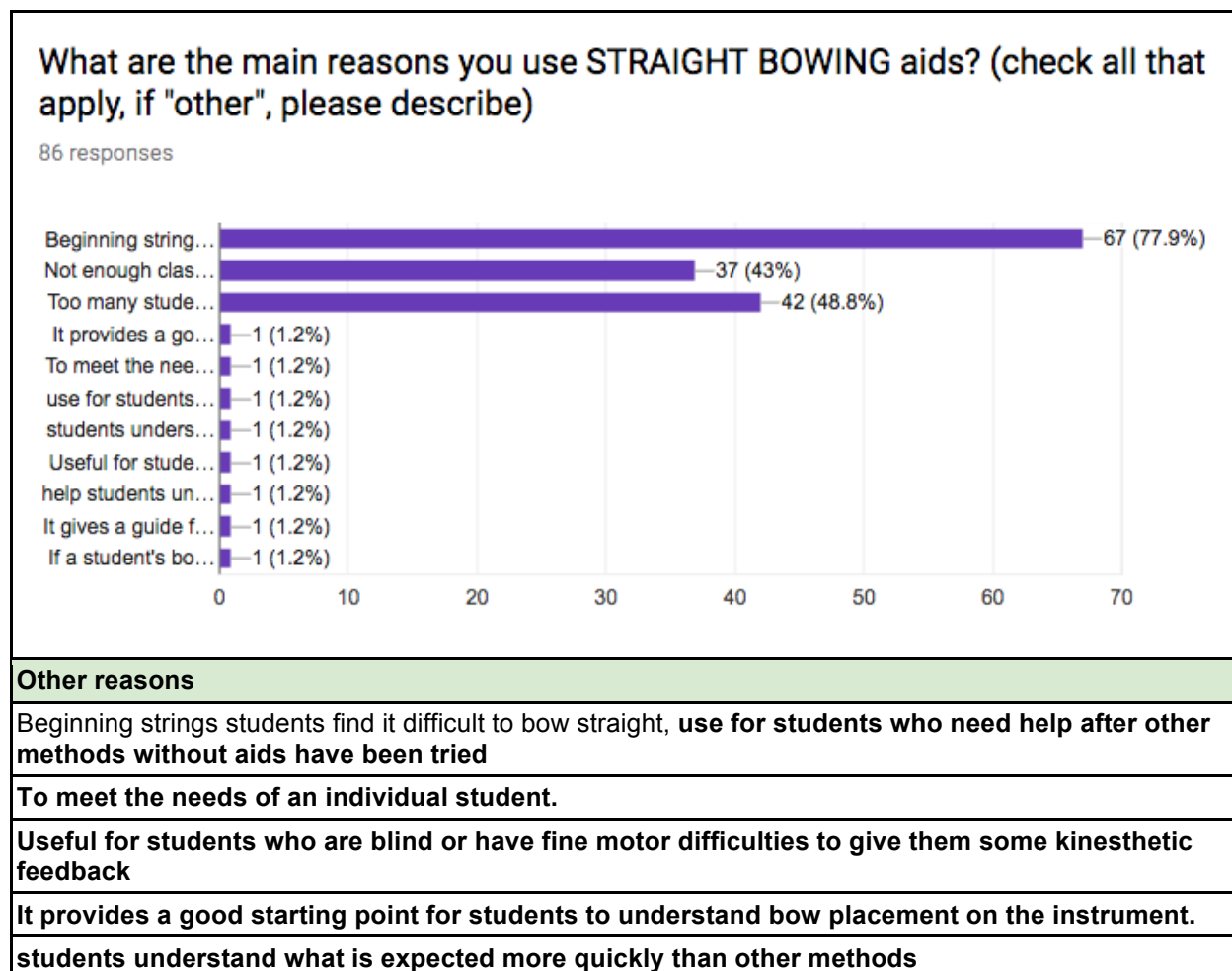


Figure D.52



Beginning strings students find it difficult to bow straight, help students understand motion
Beginning strings students find it difficult to bow straight, It gives a guide for when I'm not there and gifts a guide for other students to coach each other.
If a student's bow is very crooked and can't produce a good sound

Figure D.53

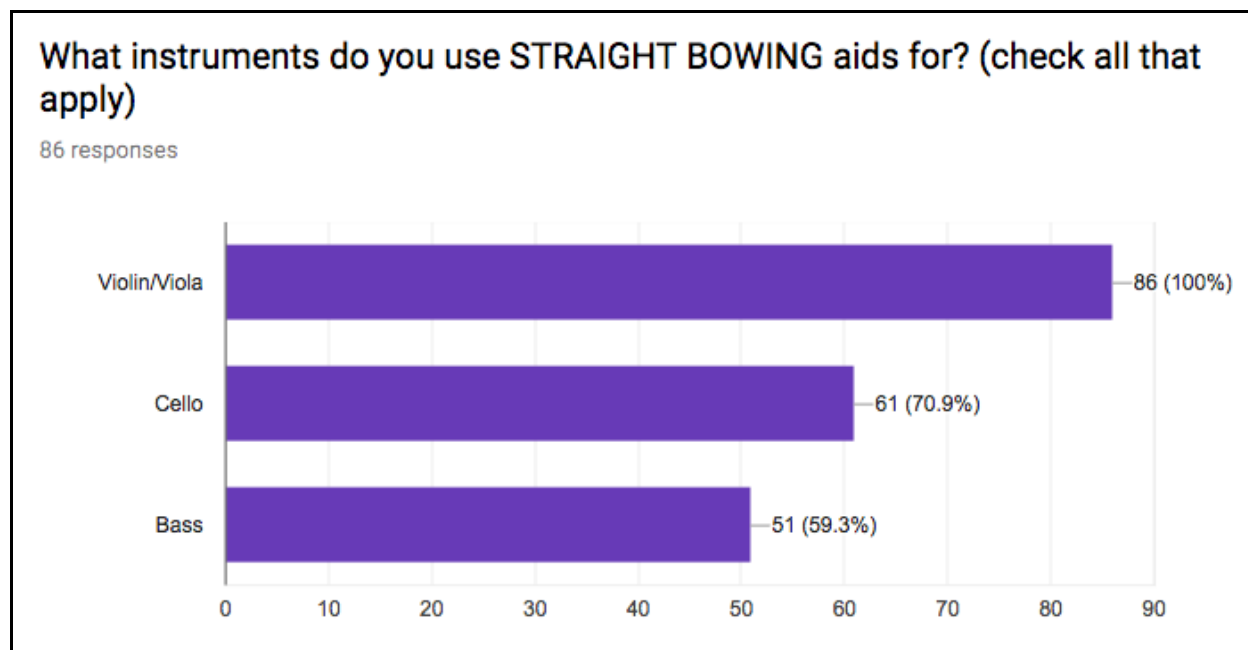


Figure D.54

If you use different STRAIGHT BOWING aids for specific instruments or situations, please describe:

6 responses

need more ideas for cello / bass

For cello and bass, I use a piece of electrical tape to make the railroad tracks instead of the rubber bands.

We use both cardboard tubes (practice bowing straight without the instrument) and straws (practice with the instrument) for a few lessons each.

Bowing through tubes works for lower strings, other strategies listed do not

Another trick i to place the bow on the bridge and keep it there.

having students bow without any aids at all is helpful

Appendix E: Catalog of Teaching Aids

The survey respondents shared many creative ideas designed to solve common pedagogical problems setting up the left and right hands of beginning string players. The following catalog includes the teaching aids that were discussed in Chapter Two, the teaching aids provided by the survey, and most importantly, the inexpensive and innovative solutions provided by the survey respondents.

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
TEACHING AIDS TO DEVELOP A STRAIGHT WRIST ON THE LEFT HAND					
Hand Shape					
DIY	Water Bottle or Soda Can	Hold a water bottle or soda can to get the feel of the placement of the second finger		X	X
DIY	Wine Cork	Use to round the hand and keep wrist from collapsing.	X		
DIY	Left hand pizzicato	Place all fingers down and use 4th finger pizzicato	X	X	X
Technique	Point thumb to ceiling	Point thumb towards ceiling, making sure the rest the hand also points to the ceiling. Make sure there is space under the neck of the instrument.	X		
Straight Wrist					
Commercial	Wrist Brace - Virtuoso Wrist Practice Aid	(by Wrist Aids LLC) Use to train the left wrist to be straight.	X	X	X
Commercial	Wrist Brace - Wrist Rascal	(by Wrist Rascal) Use to train the left wrist to be straight.	X		
DIY	Cat Toy	Use a small cat toy cupped in the left hand to keep the wrist from collapsing onto the neck.	X		
DIY	Cotton Ball	Hold a cotton ball in the left palm to prevent the wrist from collapsing.	X		
DIY	Cotton Ball "Mouse"	Place a cotton ball "mouse" in the palm of the hand. The "mouse" needs a "house" (space between palm and the neck of the instrument) and a "window" (the space in the "v" in the bottom of the hand between the thumb and first finger). Tell students "Be careful	X		

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
		not to kill your pet mouse!" This technique will keep the thumb high enough so that the neck doesn't sit in the web between the fingers and will help prevent a collapsed wrist.			
DIY	Marshmallow	Tape a marshmallow under the neck of the instrument or on the bottom of the palm to alert the student to a collapsing wrist.	X		
DIY	Mini-Easter Egg	Hold a mini-Easter egg in the left palm to prevent the wrist from collapsing.	X		
DIY	Pom-Pom Snowman	Place the sticky feet of a pom-pom snowman to the underside of the neck of the instrument. If the wrist collapses, it squishes the snowman.	X		
DIY	Straw	Tape a short piece of straw to the thumb button, horizontal to the neck of the instrument. The end of the straw should give space if student is in correct hand shape in first position, but the palm will touch the end of the straw if the palm starts to lift, alerting the student to a collapsing wrist.	X		
DIY	Straw	Tape a very short straw piece under neck of instrument to alert the student to a collapsing wrist.	X		
DIY	Superball	Place superball (1 inch) in the palm of the hand while holding the violin or viola. The superball fills the spaces and prevents a collapsed wrist. If the wrist hyperextends, the superball falls out.	X		
DIY	Thumbtack	Tape a thumbtack under the neck of the instrument to alert the student to a collapsing wrist. (Not recommended without parental approval.)	X		
DIY	Tissue Ball or Small Rubber Ball	Hold the tissue ball or rubber ball between the ball of the hand and the neck. If the student squeezes, it crushes the ball. If the wrist is straight, teacher should be able to see the ball between the neck of the instrument and the palm of the hand.	X		
DIY	Rubber Ball	Paul Rolland suggests that once the instrument is in playing position, place a small rubber ball between the G and D string on the violin (or C and A on the viola) near the bridge. The student must keep the instrument at the proper angle in order to balance the ball on the strings (Rolland, Hellebrandt and Mutschler 71)	X		
DIY	Velcro	Place the hard side of a piece of velcro under the neck of the instrument to alert for a collapsed wrist. Use the hard side as a strong tactile alert, use the soft side as a more gentle alert.	X		
DIY	Wrist Brace (Craft Stick & Velcro)	Create a wrist brace using two strips of Velcro for the arm, and add velcro to a craft stick where it will meet the velcro.	X		
DIY	Wrist Brace (Pencils and	Susan Kempter recommends using 2 pencils rubber banded on each side of the left hand and wrist to	X		

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
	Rubber Bands)	help the student understand how to play with a straight wrist. The wrist has flexibility to move up and down, but sideways is cumbersome (Kempton 64)			
DIY	Wrist Brace (Pool Noodle and Bandage or Velcro)	Create a wrist brace using a short length of pool noodle attached to the wrist with bandage tape or velcro. The pool noodle maintains space between the wrist and the instrument. The pool noodle may need to be slivered vertically to create slices that will fit smaller hands.	X		
Technique	Imagery - Bear Cave	Teach students that a tiny bear needs space to hibernate between the palm and the neck of the instrument. When you see a collapsing wrist, remind students not to crush the bear's cave.	X		
Thumb Placement					
DIY	Ball	Angela Harmon suggests placing a ball between the thumb and the neck above the "v". Balance the ball without squeezing. (Harmon 30-31)	X		
DIY	Beanie Baby	Hold the Beanie Baby toy gently by the front paw, do not squeeze. This works best with the bear or cat type of Beanie Baby. Use to teach how to relax the thumb.	X		
DIY	Corn Pad	Place on the neck of the instrument as a marker for thumb placement.	X	X	X
DIY	Corn Pad (Oblong)	Place an oblong shaped corn pad on the neck of the instrument as a marker for thumb placement. One of the short ends should point in the desired direction of the thumb. The hole in the pad shows where to place the thumb. If the hole is oblong it also guides the direction of the thumb. If the hole is circular the direction of the corn pad reminds students to point the thumb in the direction indicated by the corn pad.	X	X	X
DIY	Cotton Ball	Place a cotton ball between the thumb and the neck of the instrument. This will help prevent tension created when squeezing the thumb against the neck.	X	X	X
DIY	Moleskin	Place on the neck of the instrument as a marker for thumb placement.	X	X	X
DIY	Spy-Guy Face on Thumb	Draw "Spy Guy" eyes and a nose on top of the left thumb. If student's left thumb is pointing to the ceiling and at the correct height, they should see the drawn eyes and nose peeking over the fingerboard like a spy.	X		
DIY	Tape	Use a small piece of tape as a marker for thumb placement on the neck.	X	X	X
DIY	Velcro	Place the soft side of a piece of velcro on the neck of the instrument as a marker for thumb placement.	X	X	X
Technique	Thumb Bent Under Neck	Bend thumb so fingernail is flat against the underside of the neck so student gets a feeling of lifting and	X		

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
		placing the fingers without squeezing the thumb against the side of the neck. (This should only be used for a short scale or etude.)			
TEACHING AIDS TO DEVELOP LEFT HAND FINGERING POSITIONS AND INTONATION					
Fingerboard Markers					
Commercial	Don't Fret Position Indicator	Place the decal on the fingerboard to indicate pitch locations on the fingerboard.	X	X	
Commercial	Fiddle Fingerboard Fret Guide	Place the decal on the fingerboard to indicate pitch locations on the fingerboard.	X		
Commercial	Finger Tape	Use to mark pitch locations on the fingerboard.	X	X	X
Commercial	FingerMaps Sticker Labels	Place the decal on the fingerboard to indicate pitch locations on the fingerboard for different keys.	Viola only	X	
Commercial	First Frets Position Indicator	Place the decal on the fingerboard to indicate pitch locations on the fingerboard.	X	X	
Commercial	Mark! Set! Go! Fingerboard Tapes	Use to mark pitch locations on the fingerboard.	X	X	X
DIY	Auto Detailing or Pin-Striping Tape	Mark position of pitch locations on the fingerboard.	X	X	X
DIY	Avery 1/8" Dots (Colored)	Use color coded dots located under the D string to mark position of pitch locations on the fingerboard.	X	X	X
DIY	Bumper Stickers (thinly-sliced)	Mark position of pitch locations on the fingerboard.	X	X	X
DIY	Color Coded Tape	Mark the fingerboard where first finger goes in different positions. Use a different color for each position. Highlight music to correspond to the colors.			X
DIY	Colored Notes Music	Color the notes in music to correspond to the color of the fingering tapes or stickers.	X	X	X
DIY	Draftsman Tape (1/4" wide)	Mark position of pitch locations on the fingerboard. This tape does not have a super-sticky back, so it can be removed easily.	X	X	X
DIY	Fingering Tape to Color-Code Instrument Types	Use one color fingering tape for violins and a different color for violas to quickly tell them apart.	X		

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
DIY	Masking Tape	Mark position of pitch locations on the fingerboard.	X	X	X
DIY	Pencil	Use a pencil mark to indicate position of troublesome notes on the fingerboard.	X	X	X
DIY	Stickers	Mark position of pitch locations on the fingerboard.	X	X	X
DIY	Washi Tape (Skinny)	Mark position of pitch locations on the fingerboard.	X	X	X
DIY	White-Out	Place dots of White-Out on the side of the bass fingerboard to indicate pitch locations.			X
Thumb Placement					
DIY	Auto Detailing or Pin-Striping Tape	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Circle Band-Aid	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Colored Sticky Dots	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Corn Pads	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Felt	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Foam Stickers	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Fuzzy Stickers	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Hole Reinforcements	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Magic X	Mark an X on the pad of the thumb.		X	X
DIY	Mole Foam	Use to mark position of thumb or index finger on the neck of the instrument.	X	X	X
DIY	Moleskin	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Penny	Tape a penny on the neck to mark position of the thumb on the neck of the instrument.		X	X
DIY	Small Round Stickers	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Sticker	Use to mark position of thumb on the neck of the instrument.	X	X	X
DIY	Velcro	Use to mark position of thumb on the neck of the instrument.	X	X	X
Finger Placement					
DIY	Magic X	Mark an X on the inside of the left index finger near the base.	X		

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
DIY	Moleskin	Use to mark position of 2nd finger on the neck of the instrument.		X	X
DIY	Smiley Faces	Use a marker or pen to draw smiley faces on the finger pads or tips, depending upon the instrument. Used to teach students what part of the finger touches the string.	X	X	X
Finger Independence and Strength					
DIY	Small Objects	Susan Kempter suggests to develop strength and independence in the fingers, place small objects on the floor or a table for the students to pick up using the thumb and a single finger, keeping the finger "round and soft" and then drop the objects into a dish. Picking up objects with the thumb and each finger helps to develop the musculature of the hands. (Kempter 45)	X	X	X
DIY	Tissue	Susan Kempter suggests students pick up a tissue using a thumb and finger combination. Students pass it to each other. Use the thumb and all the finger combinations (Kempter 45)	X	X	X
Hand Shape					
DIY	Life Savers or Tootsie Rolls	Susan Kempter suggests that to establish shape of fingers and placement of elbow in relation to each string, place a roll of Life Saver candies, or for smaller hands, a Tootsie Roll in the curled fingers of the left hand. Instruct the students to "center" the candy roll over each string by moving the elbow appropriately. (Kempter 36)	X		
	Skittles or M&Ms	Christopher Selby suggests a way to help ensure that the left arm, wrist, hand, finger position and instrument are all lined up. With the fingers placed on the string, place a Skittles [or M&M] candy on the middle segment of the first finger. "If the instrument, arm, wrist, hand, and finger position are all correct, the middle segment should be parallel to the floor and the Skittles will sit atop the finger segment like it is on top of a little table" (Selby and Rush 62).	X		
TEACHING AIDS TO ESTABLISH THE BOW HOLD					
Bow Hold Preparation					
DIY	Bow Tattoos	Use a marker to place dots on the exact places on the thumb and fingers where they should contact the bow.	X	X	X
DIY	Dowel Rod	Use to form the bow hold on an object before transferring to the frog.	X	X	X

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
DIY	Pencil	Use to form the bow hold on an object before transferring to the frog.	X	X	X
DIY	PVC Pipe	Use to form the bow hold on an object before transferring to the frog.	X	X	X
DIY	Spaghetti - Raw	Form the bow hold on the raw spaghetti stick. The hand must be free of tension or the spaghetti will break.	X	X	X
DIY	Straw	Form the bow hold on a straw to keep the hand free of tension or tendency to squeeze. If it crumples or bends, there is too much tension in the bow hold.	X	X	X
DIY	Straw - Bendable	Bend the straw fully back and tape to the other half to simulate the frog. Form the bow hold on the straw to learn how to do it without tension or squeezing.	X	X	X
DIY	Wooden Skewer	Form the bow hold on the skewer before transferring to the bow. For violin and viola, place the skewer just behind the pinky nail to feel the concept of the pinky on the stick. (attributed to Gabe Villasurda)	X	X	X
Hand Shape					
Technique	Bow Panda	Teacher created a game using the school mascot to help form the bow hand shape before placing on an object.	X	X	X
Technique	Llama Song	<p>Use the song with motions from Youtube to form the bow hand shape before placing on an object. (Similar to the bow bunny or shadow puppet bunny. Use a curved thumb, not the video's straight thumb.)</p> <p>Prior to teaching the song, teach different llama poses:</p> <p>Happy llama: both ears up Sad llama: both ears down Confused llama: one ear up, one ear down Chewing: move thumb back and forth Nod yes: move wrist up and down Shake no: move wrist left and right Sleepy: turn the hand (like a violin bow) , so that the llama uses the pointer finger as a pillow Spit: Straight thumb Stick tongue out: thumb between llama teeth</p> <p>Once we have gone through all of the llama poses, we transfer them to a pencil, and eventually to the bow.</p> <p>The song is only used to help reinforce the words and motions at home:</p> <p>https://campsongs.wordpress.com/2012/05/04/llama-song-the-one-with-actions/</p>	X	X	X

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
DIY	Pool noodle	Cut down a pool noodle to slide on the cello bow to help keep the feeling of a round hand.		X	
Bow Hold on Bow					
Commercial	Bow Hold Buddies - Cellophant	(Things 4 Strings) Use to train the thumb and fingers for correct position and placement on the frog, including contact points.		X	
Commercial	Bow Hold Buddies - Frog	(Things For Strings) Use to train thumb, first and second fingers for correct position and placement on the frog, including contact points.	X		
Commercial	Bow-Nuts Donuts	(G'DAE) Foam squares with cut-outs for the pinky finger. Can also be used for thumb and other fingers. Use to develop correct position and contact points with the bow.	X	X	X
Commercial	BowMate Bow Hold	(BowMate) Place on bow. When in place properly, index finger will be curved around it guiding the other fingers to be at the correct angle and hand slightly angled toward the tip. The foam is also supposed to alleviate tenderness that can develop where the index finger touches the bow.	X		
Commercial	Fedget Bow Hold Guide	(Shock Rock Enterprises) Place over the bow to guide thumb and finger placement and contact points.	X	X	X
Commercial	L'MS Snail Bow Hold Grip	(May no longer be available.) Use to train the thumb and fingers for correct placement on the frog	X		
Commercial	Super-Sensitive Bowmaster	(Super-Sensitive Musical String Co.) Use to train the thumb and fingers for correct placement on the frog.	X		
DIY	Corn Cushions	Place on bow for pinky or thumb to develop correct position and contact points with the bow.	X	X	X
DIY	Mini Bows or Training Bow	Cut "trash" bows off beyond the grip, remove the hair. Add silver sharpie dots or other types of markers for thumb and finger positions. Students practice the bow hold and moving the bow using the lighter "trainer" bows before moving onto the weighted real bows.	X	X	X
DIY	Rubber Band "Seat Belt"	Wrap a rubber band around the frog to create a "seat belt": bring one end of a rubber band between the hair and the stick, pull both ends up so the rubber band is divided evenly. Bring each end of the rubber band over the screw. The ring finger goes under the "seat belt", which is the part of the rubber band which is horizontal over the eye of the frog. For violin and viola, the pinky sits on top where the rubber band crosses over the top of the frog. The student no longer has to grip the bow and can begin to learn flexibility of the fingers as the thumb, rubber band and second finger hold the bow in place. (Attributed to Charles Laux) Adaptation (not by Charles Laux):	X	X	

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
		for cello, the pinky goes in the seat belt. https://m.youtube.com/watch?v=GcQQUGz_X5k			
DIY	Silicone Sticky Fingertips	Use silicone gel fingergrrips in finger positions on the bow so students learn that the bow will not slip out of their hand.	X	X	X
Finger Placement					
DIY	Frog Stickers	Place frog stickers over the eye of the frog to guide placement of the 2nd/3rd fingers, and remind students of the name of that part of the bow.	X		
DIY	Moleskin	Place on bow for thumb and finger placement.	X	X	X
DIY	Stickers	Place stickers on bow for finger placement.	X	X	X
Thumb Placement					
Commercial	AcoustaGrip Bow Grip	(AcoustaGrip) Use over the grip to help with thumb placement for staccato and spiccato bowing.)	X		
Commercial	Stringvision Bow Grip	(Stringvision) Stretch over the frog on any size violin, viola, or cello bow to help the student find the correct thumb placement. The product says it is an "anti fatigue covering".	X	X	
DIY	Adhesive Felt	Mark position on the frog for the thumb and pinky.	X	X	X
DIY	Moleskin	Place on frog to show position of thumb.	X	X	X
DIY	Pencil Grip	Cut pencil grip in half, lubricate with a little soap and place on bow for thumb positioning.	X	X	X
Pinky Placement					
Commercial	Bow Hold Buddies - Fish	(Things 4 Strings) Use to train the pinky for correct position and placement on the frog, including contact point.	X		
Commercial	Pinkinest	(Young Musicians, Inc.) Place over the stick to train the pinky to stay on top of the bow.	X		
DIY	Pencil Grip	Cut pencil grip and place over the frog for a pinky crib.	X		
DIY	Plumber's Tubing	Make pinky nests with plumber's tubing	X		
DIY	Skinny Tape	Mark the facet of the bow where the pinky should land.	X		
DIY	Vinyl Tubing	Make a pinky nest with vinyl tubing: cut into one inch length, cut slits to fit over the frog (similar to the commercial ones). Adhere to bow with electrical tape.	X		
Other					
Technique	Bow Games	Use bow games to explore weight and balance, such as holding the bow upside down.	X	X	X
Unknown					

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
	Elastomer				
TEACHING AIDS TO DEVELOP STRAIGHT BOWING					
Bowing Preparation (Away from the Instrument)					
DIY	Cardboard Tube	Bow through cardboard tube to practice straight bowing and elbow movement.	X	X	X
DIY	Dowel Rod	Use dowel rods close to the width of a bow stick and a bit longer. Transfer the pencil bow hold to these long sticks. Violins/violas place one end on their left shoulder and make their bow hold on the other end just like a bow. Moving the dowel rod up and down across the shoulder gives the students an idea of what bowing feels like without sliding the actual bow across their shoulder. Students should just open and close the elbow to move the dowel rod up and down. If they move incorrectly, such as a right shoulder motion, the stick will fall off their left shoulder. Cello and bass place the dowel rod on the lap and bow by opening and closing the elbow.	X	X	X
DIY	Egg Cartons	Turn egg cartons (the ones that hold 18 eggs are close to the size of the violin) upside down, place on the shoulder as though the egg carton is the instrument and bow in the space between the "eggs". Helps keep the bowing in one "lane" and helps the student understand the movement of the elbow when bowing. Cello and bass players can hold it across their body in the area where the bow would go on the instrument.	X	X	X
DIY	Paint Rollers	Bow through paint roller to practice straight bowing and elbow movement.	X	X	X
DIY	Pringles Can	Bow through pringles can to practice straight bowing and elbow movement.			X
DIY	PVC Pipe	Bow through pvc pipe to practice straight bowing and elbow movement.	X	X	X
DIY	Rosin	Hamann and Gillespie recommend students hold rosin where the bridge would be and practice bowing while rosinning their bow. (Hamann and Gillespie 60)	X	X	X
Bowing on the Instrument					
Commercial	Bow Force	(Bow Force) Attach to violin or viola in the C bouts. The student bows between the two vinyl coated wire guides. The device folds flat and stretches in place with only foam touching the sides of the instrument. Somewhat lower than the other similar commercial products, allowing student to see left fingers.	X		

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
Commercial	Bow Tracker	(Unknown company) Attach to violin or viola in the C bouts. The student bows between the vinyl coated wire guides.	X	X	
Commercial	Bow-Right	(Bow-Right) Attach to violin or viola in the C bouts. The student bows between the two steel guides.	X		
Commercial	Super-Sensitive Tone Shaper	(Super-Sensitive) Soft strip goes under the strings and wraps around the entire instrument at the waist of the C bouts. A pair of clear plastic guides stand vertical to the instrument at each side. The student bows between the guides.	X		
DIY	Pencils	Place pencils in the top holes of the F-Holes. The student bows between the bridge and the fingerboard, with the pencils acting as a "bumper" if the bow gets too close to the fingerboard or bows at an angle.	X		
DIY	Pipe Cleaner	Bend a pipe cleaner at both ends, place the ends in the F-Holes. The middle of the pipe cleaner should be horizontal and parallel to the bridge and fingerboard. The student bows between the bridge and the fingerboard, with the pipe cleaner acting as a "bumper" if the bow gets too close to the fingerboard or bows at an angle.	X		
DIY	Pool Noodles	Cut down pool noodles to fit into the F-Holes of cello or bass. The student bows between the bridge and the fingerboard, with the pool noodles acting as a "bumper" if the bow gets too close to the fingerboard or bows at an angle.		X	X
DIY	Post-It Tape and Sticker	Place sticker in the middle of the bow for violin/viola or at the balance point for cello/bass. Place post-it tape of the same color across the F-Holes. Tell student to "Keep the greens (or whatever color is used) together" when bowing.	X	X	X
DIY	Rubber Bands and Popsicle Stick	Wrap a long rubber band around the center of the instrument, between the C bouts. Tie the ends of each half of the large rubber band with a smaller rubber band. Move the large rubber bands so that the smaller rubber band is on the edge of the instrument and place the popsicle stick vertically between the small rubber band and the side of the instrument. Student bows between the bridge and the popsicle stick. The large rubber band creates a nice visual guide as the two halves make "tracks" horizontally across the waist of the violin.	X		
DIY	Rubber Band (over-sized)	William Wassum suggests "To keep students from back-swinging their bow arms, hook an over-sized rubber band around the scroll, then hook the other end around the frog, so that when they bow, it pulls their arm forward" (Niles)	X		
DIY	Straws	Place straws in the top holes of the F-Holes, leaning	X		

Type	Teaching Aid	Description	Violin/ Viola	Cello	Bass
		back towards the player. The student bows between the bridge and the fingerboard, with the straws acting as a "bumper" if the bow gets too close to the fingerboard or bows at an angle.			
DIY	Vinyl Tape	Place two rows of tape across the instrument to create a visual guide or "tracks" to assist the student in bowing in the correct lane.		X	
DIY	Wooden Dowels	Place wooden dowels in the top holes of the F-Holes. The student bows between the bridge and the fingerboard, with the dowels acting as a "bumper" if the bow gets too close to the fingerboard or bows at an angle.	X		
DIY	Yardstick, Dowel or PVC Tube	Hamann and Gillespie suggest for cello students to understand motion of right arm and forearm: Have each student hold the end of a yardstick, dowel, or PVC tube in front of him at the height where their strings would be when the instrument is in playing position. Then have them place their bow hand shape around the object and slide their hand back and forth along the stick. As they are moving their hand, check to see if the motion is in two steps. In Step 1, the motion with the hand moving away from the body is first initiated by the upper arm, followed by an opening of the forearm. In Step 2, when the hand is moving toward the body, the elbow should close first, followed by the upper arm. (Hamann and Gillespie 61)		X	
Technique	Bow on the Bridge	Place the bow on the top of the bridge. Bowing on the bridge teaches the player the exact angle of the bow and elbow needed to bow parallel to the bridge. Can be done with open strings or with practicing string crossings in music.	X	X	X
Technique	Wall	Position upper arm against a wall and play only in the upper half of the bow. Helps student to feel the opening and closing of the elbow as the only part of the arm that needs to move.	X		
Other					
DIY	Colored Tapes	Place colored tapes on bow at points where elbow makes a right angle to help with bow distribution.	X		

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