

Action Research: Pitch Matching and Recognition in Beginning Male Singers

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EDUC 480
Dec. 3rd, 2008

Action Research Abstract

This action research project was performed at Como Park senior high school and focuses on improving the pitch matching/recall abilities of three beginning male singers. Research questions that focused the study were:

1. Are students aware of their inability to match or recall pitch?
2. How can pitch matching be taught especially if students have a difficult time hearing/interpreting the piano and/or a human voice?
3. Does creating awareness to this problem help students self identity when they are/are not correctly recognizing/recalling pitches?

Three students scoring below 50% on a pre-test were given ten minute 1:1 sessions twice a week for four weeks and then all students were given a post-test identical to the pre-test a month earlier. The 1:1 sessions focused on a “home-note” and call and response method that allowed the student practice at hearing pitches, singing them back, and understanding the difference in timbre between the voice and the piano. Additionally, the students were encouraged to talk through much of the process in order to internalize their learning. Results of the post-test show that this “home-note” method of personal instruction works as the 1:1 students improved their scores from 47% to 88% while the non pull-out group improved from 74% to 82%. This action research urges Como high school to continue these 1;1 lesson with the help of the student teacher as well as charges academic and music scholars to investigate the under researched area of adolescent, male voices.

Introduction

Many beginning male singers in high school choirs have difficulty recognizing or matching pitches. This, obviously, is a struggle for many directors who often have limited time and resources to prepare students for large concerts, let alone private voice instruction. Many directors are forced to mask the sounds of these non pitch matching students by placing them in the back of the choir or surrounding them with strong, more advanced singers. Both of these solutions simply cover up the problem and do not help the beginning singer learn. The focus of my action research plan is to assist those beginning male students in choir with difficulties matching pitch with both the piano and other voices. This action research plan seeks to identify the reason why it is difficult for student to recognize/recall pitches and to create pitch matching exercises that will assist those with difficulties hearing pitches to become more accurate with their pitch recognition and recall. This, in turn, will help the choir create a more unified sound and make the students more confident solo singers. This action research plan will be conducted at Como Park Senior High with the Men's Choir under the supervision of teacher/director Carol Whitney. This choir was selected due to the large numbers of beginners, relatively small number of total students, and the high number of students who have difficulty recalling/matching pitches.

Related Literature

While much has been written concerning the inability for students to recognize/match pitches and how to access such students, significantly less has been written to discuss how to improve pitch-matching abilities. Literature that does address this issue continually cites the same few resources and formulate no new ideas about how to teach pitch matching skills without the use of electronic or computer based programs. Data that has been collected has primarily focused on younger students and those that mention older singers often offer no solutions or

interventions. It appears that the focus on pitch recall and matching in the past has been to diagnose the problem through interval tests and tonal memory, but then little is done to enact change.

Of most help have been the few articles addressed above that focus on older, male singers and problems of the pubescent vocal change. It is from these main articles that I draw many of my research questions and instructional methods. In is my hope that this action research plan uncovers a unique and successful way to help those with pitch difficulties become better singers. Below is a discussion of several key articles that have influenced my research.

Steven Demorest's article entitled "Factors Influencing the Pitch-Matching of Junior High Boys" was the only article that looked at pitch matching problems in older students. Focusing on boys, the article discusses the contribution of the voice change to inability to match pitch. Students with difficulties were tested on single pitch matching, contextual pitch matching, and pitch-series matching. Those having difficulty were given training in intervals and pitch matching focusing around middle C. While the findings were not discusses at large, the researchers stress the importance of "context of pitch matching" (p. 201). It is important for teachers who wish to help students better match pitch to be consistent and persistent in their teaching while also understanding that a myriad of reasons can contribute to the inability/difficulty to match/recall pitches.

"Poor Pitch Singing," printed in *The Journal of Research in Music Education*, published in the early 70's is one of the more detailed studies concerning the instructional intervention to poor pitch production. This article details the attempt to improve the pitch production of 90 students age 6-8. The school district from which they came determined through un-discussed tests whether the students were monotone or drone singers. The training consisted of two 30

minute sessions per week for 8 weeks and focused on a “home-pitch” located in the speaking range of each student. Students were trained on interval production, rhythm, melodic recall, and single note production. The researchers found that with the training sessions and practice with the full ensemble, small improvements were made over the course of the study. Davies calls for more research to be done on pitch production, but as current research shows, little more has been written on the subject.

Elizabeth Willis’ article “Effect of Voice Change on Singing Pitch Accuracy in Young Male,” published in 2008, is one of the shortest articles published on pitch production available; however, this research is also some of the most current on the effects of the pubescent voice change and its effects on pitch accuracy. This research focused on 79 recordings of boys singing 4th and 5th intervals and singing “Happy Birthday” to electronically assess pitch accuracy. It was discovered that those in current stages of voice change and those that had recently changed had greatest difficulty in accurately matching pitches in either high or low ranges. Although no solutions are proposed, the article highly suggests that many problems in pitch matching may stem from the voice change and the discomfort with adjusting to a new voice.

Defining the Variables

When exploring this data, it is important to remember that not every 1:1 with each student was identical. While some students progressed rather quickly, others needed much more scaffolding to reach the same levels. Additionally, the absence rate for two of the students was quite high, with one student transferring schools in the middle of the research. With these constraints, it was hard to give each student the exact same lesson on each day. However, this personalized approach also made it easier for the students to feel relaxed and unhurried throughout their learning process.

Another variable to consider is the learning/singing that these students did outside of the 1:1 setting. All four students were members of the choir where daily exercises in sight-singing, rhythmic clapping, and solfege took place. Although these exercises were done as a group and each student was exposed to a similar learning environment, it is impossible to know how much this affected the learning of each individual student. Perhaps, for some, the reinforcement between the in class and 1:1 sessions was greater and thus enabled them to learn faster.

Research Questions

1. Are students aware of their inability to match or recall pitch?
2. How can pitch matching be taught especially if students have a difficult time hearing/interpreting the piano and/or a human voice?
3. Does creating awareness to this problem help students self identify when they are/are not correctly recognizing/recalling pitches?

Intervention

I began with a pre-test to choose several boys that needed the most 1:1 practice to begin my intervention. Deciding on four boys, the intervention focused around 10 minute 1:1 lessons in which we focused on pitch recognition and matching. These lessons were held twice a week for a total of four weeks. The first lesson focused on finding a “home-note” or note that the student could hit 100% of the time with accuracy. Once this note had been established, the student and I worked to slowly sing half step intervals up and down to establish both range and pitch-matching ability. The second week of lessons included singing intervals of do-mi-so-do in various different patterns in a call and response method. I would sing and play the pattern and the students would respond while I played along. For students who had difficulty with the intervals, we worked up to them by singing up the scale and back down slowly (do,-do-re-do,-do-re- mi-re-do, etc.). This work took about a week for each student to be able to successfully sing these intervals most of the time. The next week included interval work between two notes. Once again, I would play and sing the two notes, and then play the intervals on the piano as the students sang the intervals. The

final week of 1:1 lessons focused on reviewing the major components of the previous lessons as well as working on recognition of same and different pitches. These 1:1 lessons concluded with a re-take of the pre-test given a month earlier to gauge improvement (see appendix A for a detailed explanation of each week of 1:1 lessons).

Data Collection

Data was collected through a pre-test given to each member of the Men's Chorus. Students were asked to identify pitches being same or different, match single-note pitches, as well as intervals of two notes (see appendix B). Based on these results, the four boys scoring under 50% (three at 46% and one at 20%) were chosen for 1:1 lessons. Three boys completed the 1:1 series. Data collection during the 1:1s consisted of note taking during the sessions as well as informal discussion between myself and the students. After the month of 1:1 lessons, an identical test to the pre-test was given to the students. After the pre-test, students were also asked a series of interview questions where I recorded their general responses and feelings towards the lessons.

Data Considerations

One of the most difficult factors in this research was the absentee rate of the students I was working with. While one student participating in the 1:1 sessions transferred mid research, many others were regularly tardy or absent from class. This made administering similar 1:1 sessions to each student each week, difficult. Additionally, the absentee rate of those not in the 1:1 sessions was high also. This made it impossible to give all post tests on the same day. While I do not believe this negatively affected my research, it is a factor that must be considered when interpreting the data presented.

While impossible to be an anonymous process, I did keep full confidentiality in terms of student progress and ability. It was my goal to insure that students did not feel singled out and

ridiculed for their inability to match/recognize pitch as well as others. However, I hope that by spending 1:1 time with everyone (during the pre and post tests), and by stressing the importance that we are all learners, I curbed the effects of high school teasing and ostracization. Keeping confidentiality also insures that students do not know the progress of others in the group (unless of course a change is heard in the group setting). It is important that with beginning singers care is taken to understand that students come with different levels of exposure to music and natural ability, but that everyone is there to learn and grow as individuals.

Data Analysis and Interpretation

It was discovered early on in my research that most students are capable of hearing when they are or are not matching pitch, especially in a 1:1 setting. Although difficult for them to adjust at first, students were able to recognize when their pitches and the pitches I was playing/singing differed. By talking through these instances, students were able to describe singing a correctly matched note as “getting it right,” or “hearing it click.” Unmatched pitches were described as “a little off,” “funny,” or “nasty.” Thus, it seems relatively safe to assume that barring ear trauma or damage, which very few students have, many can learn to recognize pitch discrepancies and, with practice, can begin to correct them on their own.

An interesting finding through my 1:1 sessions was the discrepancy between the timbre of the piano and that of the human voice. While several students could not match any pitch when played on the piano, they could successfully match the same pitch when sung by me. Discovering this early on, the plans for my research were greatly changed and involved me singing and modeling much more than I had initially expected. However, this finding suggests that more research must be done on the timbre differences between piano and voice and how this affects beginning male singers.

By focusing the 1:1 sessions on call and response, consistent playing and singing of the examples, and by plentiful discussion and feedback, students began to tell on their own when either their pitch was off or they gave a wrong answer on a pitch-differentiation question. Students would often stop and correct themselves immediately after answering a question incorrectly or would stop singing and say things like “I need to start again because that was a bit wrong.” This type of behavior illustrates that not only does the call and response and verbal discussion method work to illustrate correct pitch singing, it also reinforces the student’s learning and allows them to be able to catch their own mistakes. This type of self-monitoring is indicative of internalization of the learning process as well as self-discipline to catch mistakes.

In discussing the variables of this research, I suggested that the classroom learning of the students may allow some to progress faster than others. While perhaps this is true, the data suggests that all students progressed at a relatively even pace in the classroom when comparing the results of the post tests. While some students finished the 1:1 lessons with a larger vocal range, their overall ability to perform pitch-recall and pitch matching tasks appears to be similar and, more importantly, more advanced than the non 1:1 students.

The following table illustrated the pre and post test scores for the students that completed the month of 1:1 lessons.

Student	Pre-test score (15 points total)	Post-test score (15 points total)
A	7	13
B	7	13
C	7	14

It is important to note that the average score of the other ten students on the pre-test was 75%, with only one student scoring 100%. The average score on the post-test for the same group was 82%. As we can see, the students who received the 1:1 lesson attention had an average post-test score of 88%, significantly higher results with only 80 minutes of 1:1 work. This quantitative data seems to suggest that the method of 1:1 instruction based on the home-note method is successful in teaching students how to better recall/match pitches. Analysis of the data suggests that if possible, further practice should have focused on identifying intervallic differences of $\frac{1}{2}$ steps as this question was the one missed by all three students in the post-test. However, this problem with $\frac{1}{2}$ step intervals had been determined in the 1:1 lessons, but time did not permit further instruction on this area. Qualitatively, the students appeared satisfied with their overall improvement stating that the 1:1 sessions “helped their ear hear the notes better,” “made them better singers overall,” and “taught them how to focus before beginning to sing.” These responses suggest that not only were the 1:1 sessions successful, but enjoyable for these beginning singers.

Action plan

My suggestion for Ms. Whitney’s beginning male singers is that the student teacher is used to continue these 1:1 lessons. During this period, the student teacher is often correcting papers from other choirs or simply listening to the men sing. At times, she is directing them as a large group. It is my suggestion that Ms. Whitney continue to direct the ensemble so that the student teacher can continue work with these singers 1:1. Ideally, these lessons would continue from the point where this research left off, but I feel that even a continuing review of material already learned would be productive in the students’ learning processes.

It is important to insure that each session is well structured and that adequate scaffolding is present to help each student achieve at his own level. Although 1:1 sessions can be daunting, the results from this small study suggest that with an organized approach, students can learn to improve their pitch matching and tonal recall abilities quickly. Sessions should include ample review of previous ideas as well as a wealth of discussion in order for the students to become an active learner and begin to connect the processes of hearing a pitch, interpreting the sound, and recalling or matching it. It is additionally important that the instructor give plenty of positive feedback and reinforcement to the students as they progress. Oftentimes, students are simply timid and creating a welcoming environment can make a world of difference to a struggling singer.

I also suggest that Ms. Whitney keep doing many of the fine things she has already instituted in this classroom. The solfege, sight-reading, and rhythm lessons undoubtedly help the men and additionally instructive are the times when she makes the men tape themselves singing, play it back, and evaluate themselves. Continuing daily written self-evaluations are also important, although perhaps a question could be added to the evaluation specifically pertaining to pitch matching. If time does not allow for the student teacher to perform these 1:1 sessions, perhaps Ms. Whitney could take them for ten minutes before or after school, or during homeroom. Although this may prove difficult as other students already have 1:1 lessons, ensemble practices, etc. during this time. In general, continuing the learning methods already in place, using the additional resource of the student teacher, or finding small segments of time in which to work with these students will allow Ms. Whitney's choir to continue to grow as singers and improve their pitch matching/recognition abilities.

Conclusion

Although impossible to draw definitive conclusions with such a small sample size, it seems apparent that intention, regular 1:1 sessions with beginning male singers help them in building skills centered on pitch matching and recall. It is important to remember that these sessions must be highly organized with a goal in mind at the end of each lesson, but fluid enough to adapt to a slower or faster learner. Following the basic intervention plan outlined in this action research, teachers should begin noticing a difference in their students' singing abilities in as little as 1.5 weeks. While time management is difficult for all teachers in our times, it is important to attempt to provide these beginning students with support and education early on in their singing to allow them to become confident and strong singers. This action research charged current music and academic scholars to address the gap in literature about both beginning adolescent male singers and the inability to recall/match pitch while outlining one possible method to do so. So many singers can be helped with such 1:1 lessons and we, as educators, owe it to all the potential singers in our schools to give them the support and education they need.

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Appendix A

Lesson 1: establish a “home note” with the student.

Begin with the student speaking; have them read a few sentences or just get a sense of their speaking voice range by having them introduce themselves and answer a few basic questions. Begin exploring notes with the student within their speaking range. Play and sing a note and see if they can match you. If they are having difficulty, try higher pitches first (falsetto or “little boy” range). The home note is the note that the student can always hit with 100% accuracy. If the student has 2 home notes that they accurately match, simply picking one should be sufficient.

Lesson 2: ½ step intervals

Review the student’s home note. Then, from the home note, sing and play ½ step intervals up and down from the home note while the student sings along. This singing can be done on neutral word such as “do” or “la” Record the range of matching ability that the student has. Test the top and bottom range several times to ensure that the student becomes comfortable with the exercise.

Lesson 3: triads

Review home note and ½ step intervals. Then, practice triads by singing and playing various patterns involving do-me-so-do (high do). Sing and play a pattern then have the student sing it as you play it again. If the student is having significant trouble, try to build up their skills by singing do-re, then do-re-me, and then do-me. This scaffolding will reinforce the exercise and improvement should come quickly. If students are having difficulty with high and low do, some patterns involving so-do (high do) should help. Finally, review ½ intervals again from the home note and record any change in range and pitch matching ability.

Lesson 4: pitch matching and beginning intervals

Review previous lessons quickly. Play and sing random notes within the range of the singer and have them sing them back to you as you play with them. Record how effective the student is at this. Then, test the student on intervals of thirds and fifths. First, play and sing the interval and then have the student sing as you play it again.

Lesson 5: Review

Review all concepts learned up to this point.

Lesson 6: pitch recognition

Play two pitches of on the piano and ask if they are the same of different pitch. Record how well the student can identify different/similar pitches. ½ steps appear to be especially difficult for beginning singers to hear. Don’t forget to include “tricky” intervals such as do (low) to do (high) to teach the difference between different *notes* and different *registers*. This lesson should involve a lot of student feedback and discussion on why notes are different/similar. Once a student has an answer for an interval, ask them why they are answering the way they are to insure that they are not simply guessing, but making an educated choice.

Lesson 7: Pitch recognition and matching

Review pitch recognition both with single pitches and intervals. Next, play and sing intervals and then have student sing the interval back while you play along. Test $\frac{1}{2}$ step intervals one more time. Review final concepts of understanding pitch differences, register differences, etc.

Lesson 8: Post-Test

Give post-test to students to see if 1:1 lesson helped them improve. It is additionally useful to ask the students questions about the 1:1 sessions for qualitative data.

Appendix B: Sample Pre/Post Test

1. Pitch recognition (same or different)

- a. C and E
- b. F and F#
- c. D and G flat
- d. B and B (octaves)
- e. E flat and A

2. Single note pitch matching

- | | | |
|-----------|-------------------------|------------------------|
| a. C | 1 st octave: | 2 nd Octave |
| b. F | 1 st octave: | 2 nd Octave |
| c. G flat | 1 st octave: | 2 nd Octave |
| d. B | 1 st octave: | 2 nd Octave |
| e. A | 1 st octave: | 2 nd Octave |

3. Interval matching:

- | | | |
|-------------|-------------------------|------------------------|
| a. C to F | 1 st octave: | 2 nd Octave |
| b. B to D | 1 st octave: | 2 nd Octave |
| c. A to E | 1 st octave: | 2 nd Octave |
| d. F# to G# | 1 st octave: | 2 nd Octave |
| e. B to C | 1 st octave: | 2 nd Octave |

