

# The Composition of a Voice Lesson: How a Motor Learning Classification Framework Affects Teacher Effectiveness

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In the author's recent survey, sixty-two singers and teachers were asked: "What percentage of a voice lesson should be comprised of student singing?" The average response was 75 percent of the lesson. Yet a separate IRB-approved pilot study found that students sang, on average, 25 percent of the time in observed lessons. This suggests that there is a disconnect between teachers' beliefs and what actually occurs. Yet there was a positive, strong correlation between the amount of time students sang and teachers' self-rated effectiveness. These results imply that when students sing more, teachers feel a greater sense of effectiveness.

**S**INGING IS A COMPLEX MOTOR TASK that exists within the realm of procedural learning, in which learning relies on doing, rather than knowing of or talking about how to sing. Therefore, how time is divided in a voice lesson between talking and singing is relevant to the student's skill acquisition and the teacher's effectiveness. Previous research studies have focused on the different types and quantity of teacher feedback but have not explored how the amount of talking versus singing could alter the effectiveness of a voice lesson.<sup>1,2</sup>

In a recent survey by the author, over sixty teachers and singers were asked this fundamental question: In voice lessons, how much singing should students be doing and how much talking should teachers be doing? The average response was that students should be singing 75 percent of the lesson time.

In a separate IRB-approved pilot study by the author, ten different voice lessons were observed and transcribed. The instructional behaviors observed were classified into the following five categories from a motor learning classification framework (MLCF) outlined by Crocco, McCabe and Madill: *motivation, modeling, augmented feedback, verbal instruction, and student physical attempts*.<sup>3</sup>

The results of this pilot study found that in the ten lessons observed, students sang on average only 25 percent of the lesson time. This implies that there could be a great disconnect between what teachers believe should be happening within the voice lesson and what may actually be happening. Therefore, voice teachers should consider investigating how much talking occurs in the lesson versus how much singers are singing. If 75 percent of the lesson is filled with teachers modeling (either by singing or via an instrument) or providing verbal instructions instead of the student actually singing, the student is walking away from their lesson with only information rather than action to put into their practice.

This pilot study additionally found that there was a statistically significant, strong positive correlation between the percentage of time students spent singing in their lesson and teachers' self-rated effectiveness scores, suggesting that by creating more space in the voice lesson for students to sing, teachers can also feel a greater sense of effectiveness. The methods utilized in this pilot study can provide teachers who wish to reduce their talking in lessons with self-reflective tools to shift instructional behaviors in favor of more student singing time.

## BACKGROUND

### Procedural versus Declarative Learning

Learning is divided into two different modes: *procedural* and *declarative*. Each can be defined as follows:

- *Declarative Learning*: "Fact-based learning is the process of storing a fact or piece of information in long-term memory so that it can subsequently be recalled or recognized by the learner."<sup>4</sup>
- *Procedural Learning*: "Refers to the acquisition of motor skills and habits . . . procedural learning, acquisition and memory are demonstrated through task performance . . . procedural learning usually requires repetition of an activity."<sup>5</sup>

In other words, declarative learning is to "know," and procedural learning is "to do." The simple motor skills described in this definition refer to movements that are learned but not inherited, such as tying your shoes.<sup>6</sup> Complex motor skills, such as figure skating or learning an instrument, take longer periods of practice to learn in comparison to simple motor tasks. Motor skills that occur within areas such as athletics and music require procedural learning through practice. The learned movements required in throwing a baseball, swimming one hundred meters, or playing the piano are all complex, requiring a coach or teacher to guide the learning process and provide feedback.

In athletics, learners are observed often by coaches and given feedback in group practice, individual practice, or games. For example, a figure skater might practice with their coach five days a week, Monday through Friday, for two hours each. By contrast, in most collegiate music curricula, students typically enroll in thirty- or sixty-

minute lessons once a week with a teacher where they are observed and offered feedback.

In comparison, a figure skater has twenty times the amount of contact with a coach or teacher per week, with the opportunity to receive augmented feedback, than the music student does. Therefore, it is imperative that music lessons allow time for the learner to attempt the complex motor skill and for the teacher to provide augmented feedback which should inform students' practice in between lessons.

### Teacher Effectiveness

Albert Bandura was the creator of the self-efficacy theory framework in 1977, upon which many studies on self-efficacy are founded.<sup>7</sup> His framework described the direct influence that self-efficacy (also called personal efficacy) has on the choice of activities chosen for learning, the learning setting, and expectations of success. Bandura stated the following:

Efficacy expectations determine how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences. The stronger the perceived self-efficacy, the more active the efforts.<sup>8</sup>

The theoretical framework outlined by Bandura suggests that if expectations of efficacy are higher, teachers will expend more effort and will persist for longer in the education profession despite obstacles or challenges. In a study by Dekant Kiran, which utilizes Bandura's framework, Kiran states:

Teachers with high self-efficacy are more eager to use newly introduced teaching strategies, more sensitive to humanitarian classroom management and have positive feelings toward the teaching profession.<sup>9</sup>

Voice teachers in the pilot study were asked to complete a survey which assessed their self-reported efficacy in the individual lesson setting. Tschannen-Moran and Woolfolk Hoy describe teachers' sense of efficacy as beliefs based on teachers' judgments of their own capabilities in bringing about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated.<sup>10</sup> Teachers' sense of efficacy has been related to student outcomes in achievement, motivation, and students' own sense of efficacy.<sup>11</sup>

A teacher's sense of efficacy can also be a positive factor in fighting "occupational burnout," especially if an educator feels that their work is effective.

Burnout is a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who do "peoplework" of some kind . . . A pattern of emotional overload and subsequent emotional exhaustion is at the heart of the burnout syndrome . . . The response to this situation (and, thus, one aspect of burnout) is emotional exhaustion. People feel drained and used up. They lack enough energy to face another day. Their emotional resources are depleted, and there is no source of replenishment.<sup>12</sup>

Effectiveness is an important tenet that has been explored within the teachers of other academic subjects, such as science, but has not yet been explored in voice teachers specifically. The lack of research in the voice teacher population needs to be addressed not only because of the possibility of burnout, which while negatively affecting the relationship between teacher effectiveness and student outcomes or growth, could also lead to voice teachers leaving the field altogether.<sup>13</sup>

### **Augmented Feedback**

When learning a motor task, feedback is a valuable tool for the learner. Motor learning researchers Schmidt and Lee state that "information about performance [also known as feedback] is the single most important variable for motor learning (except for practice itself, of course)."<sup>14</sup> Feedback can be divided into two broad classes: *inherent feedback* and *augmented feedback*.

Inherent feedback—information provided as a natural consequence of making an action; sometimes called intrinsic feedback. . . . Augmented feedback—information from the measured performance outcome that is fed back to the learner by some artificial means; sometimes called extrinsic feedback.<sup>15</sup>

The purpose of augmented feedback is "to act as information and . . . form associations between movement parameters and resulting action."<sup>16</sup> Singers are the only musicians that aurally and sensorily experience their voices differently from their audience. Teachers provide augmented feedback on what the singing sounds like to others, outside of the body of the singer.

While all of the instructional behaviors listed previously are important components of a voice lesson, the last of these—student physical attempts—are crucial, because singing is a motor skill which falls under the category of procedural learning. Therefore, motor learning must be learned by trial and error. If most of the lesson is filled with modeling, verbal instruction, and feedback by the teacher, then the student has only been exposed to the target motor skill and has not actually learned it themselves. In the realm of motor learning, as expressed by voice pedagogue Lynn Holding, "exposure is not learning."<sup>17</sup>

... procedural learning is a process that results in a permanent change in behavior as a result of practice, with practice (rather than experience) being the crucial factor that distinguishes declarative from procedural learning. Exposure is not learning, and in the motor realm, neither is simple experience. In essence, motor learning must be learned by doing through trial and error and can only be declared as definitively learned (note the past tense) with practice.<sup>18</sup>

## **METHODOLOGY**

### **Measurement Instrument: Voice Teacher Self-Efficacy Scale**

The author of this pilot study adapted the Teacher Efficacy Scale (TES), created by Sherri Gibson in 1983, to include language specific to voice teaching.<sup>19</sup> The adapted "Voice Teacher Self-Efficacy Scale" (VTSES) was distributed to teacher participants as a Google Form. The Google Form included demographic information found in Table 1. Participants were then asked to rate their agreeability to the following statements on a 5-point Likert scale where 1 corresponded to "Strongly Disagree" and 5 corresponded to "Strongly Agree." Below are excerpted examples of the statements:

- If a student did not remember the information I gave in a previous lesson, I would know how to increase their retention in the next lesson.
- I can provide an alternate explanation when students are confused.
- I am able to help my students think critically.
- I am able to accurately assess whether I have been assigning tasks at the correct level of difficulty.

### Measurement Instrument: Motor Learning Classification Framework

Audio and video recordings were taken of ten different teacher and student duos who each recorded one lesson apiece. Two of the recordings were of online lessons using the Zoom platform and eight of the recordings were of in-person lessons. An online transcription service named “Otter.AI” was utilized to transcribe the lesson recordings. The Otter.AI transcriptions were revised for accuracy to clarify text or singing language and nonverbal directives were added. An excerpt of a lesson transcript is given below as an example.

Teacher: Beautiful, sticky M.  
Student: [sings] “Me-ma-me-ma-me.”  
Teacher: Good.  
Student: [sings] “Me-ma-me-ma-me”  
Teacher: I loved it.  
Student: [sings] “Me-ma-me-ma-me.”  
Teacher: Good, no stretching [head stretches up to the sky].

Using the written transcript, the verbal and non-verbal contents of each lesson were categorized into the following instructional behaviors from the MLCF: *motivation, modeling, verbal instruction, augmented feedback* and *student physical attempts*. The first instructional behavior is “motivation,” using goal-setting or outlining the importance or benefit of the task. For example, the teacher may say, “If you practice in front of a mirror, it will help to monitor your mouth shape and tongue position.” The second instructional behavior is “modeling,” in which the teacher provides a physical demonstration either singing or playing the piano to help the student understand the task.

The third is “verbal instruction,” which provides information about what a student should do. For example, a teacher may say, “Place your hand on the side of your ribcage to feel an expansion during inhalation.” The fourth instructional behavior is “augmented feedback” given by the teacher after the student has completed the task and can be either verbal or nonverbal. An example of nonverbal augmented feedback is a thumbs-up or a nod. The last instructional behavior, “student physical attempts,” is time spent in which the student is actually singing. This pilot study only categorized singing in this category and did not include stretching or speaking. Finally, any lesson contents that could not be categorized

into one of these five behaviors were marked as “NC” or non-category.

## RESULTS AND IMPLICATIONS

### Correlation Between Student Singing Time and Teacher-Rated Effectiveness

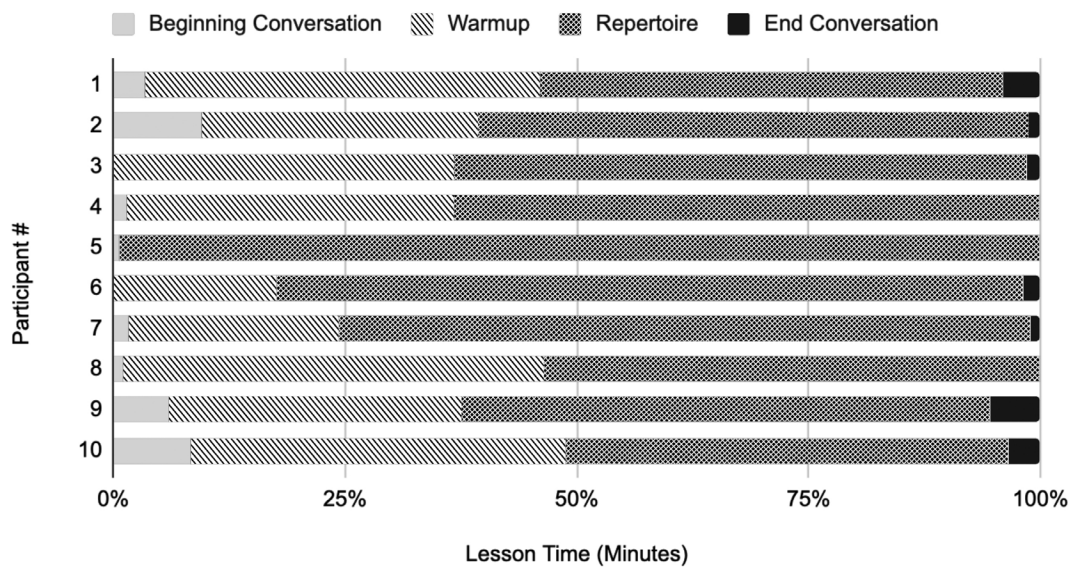
One of the goals of this pilot study was to determine if there was a relationship between how much students sang

**TABLE 1. Participant Demographic Data**

	n	%
Gender (Teacher)		
Female	4	40%
Male	5	50%
Non-binary	1	10%
Highest Academic Degree Attained (Teacher)		
Undergraduate Degree	3	30%
Master's Degree	7	70%
Voice Part (Teacher)		
Soprano	2	20%
Mezzo Soprano	3	40%
Tenor	3	30%
Bass/Baritone	2	20%
Years of Individual Voice Lessons (Teacher)		
3–5 Years	1	10%
9–11 Years	2	20%
12+ Years	7	70%
Years of Teaching Experience (Teacher)		
0–2 Years	3	30%
3–5 Years	1	10%
6–8 Years	1	10%
9–11 Years	2	20%
12+ Years	3	30%
Years of Individual Voice Lessons (Student)		
0–2 Years	3	30%
3–5 Years	5	50%
6–8 Years	2	20%
Genre of Music in Lesson		
Classical	7	70%
Musical Theater	2	20%
Commercial Contemporary Music	2	20%**

\* Note: N=10

\*\* Participant 10 marked both Classical and CCM as genres worked on in the lesson



Graph 1.

in their lessons and how teachers rated their own effectiveness. A Pearson's product-moment correlation, which measures the strength of a linear association between two variables, was run to assess if a relationship existed.<sup>20</sup> There was a statistically significant, strong positive correlation between the amount of time students sang in their lessons and the Voice Teacher Self-Efficacy Scale scores.<sup>21</sup> These results suggest that when students sing more in their lessons, teachers feel a greater sense of effectiveness.

Out of the ten voice lessons observed in this pilot study, six were sixty-minute lessons and four were thirty-minute lessons. When the ten lessons were quantitatively analyzed, it was found that the students sang between 41 percent and 20 percent of the total lesson time, so the average percentage of student singing time was 25.7 percent. These percentages reflect time in which the student was singing and did not include time in which students were speaking, intoning text, stretching, or using non-verbal communication; though these are important tenets of student learning, this pilot study focused specifically on student singing. In this author's opinion, one of the most important findings of this pilot study bears repeating: students were only singing, on average, 25 percent of the lesson time.

#### Graph 1: Lesson Progression of Ten Voice Lessons Observed

The significant finding that students were only singing, on average, 25 percent of the lesson time raised a related

question: how was the remainder of the lesson spent? See Graph 1 and note that it collectively charts the progression of each of the lessons observed in this pilot study. The horizontal axis plots the total lesson time (regardless of whether the lesson was thirty or sixty minutes).

The vertical axis outlines each of the ten teacher/student pairs. The different bars mark where each portion of the lesson begins and ends. The "bookends" of the lesson (the beginnings and endings) are represented by the gray bars and black bars, respectively, and capture any talking that occurred at the beginning and ending of the lesson. The "core" of the lesson, the warmup and repertoire portions, are represented by the diagonal lines and crosshatched lines, respectively.

At first glance, some similarities are apparent; the first and most obvious one is that the majority of time spent in each lesson was on the core activities. However, it is very important to note that these core activities did not contain unadulterated student singing time. Rather, the two "core" categories ("warmup" and "repertoire") contained any or all of the following actions: from the teacher, there was modeling, augmented feedback and verbal information; from the student, were verbal responses as well as singing itself. This helps explain why, even though 90 percent of the lesson was spent on warmup and repertoire, the student was actually singing on average only 25 percent of the time.

Investigating these two core activities further, it was noted that during the warmup portion of the lessons, many teachers only allowed the student to attempt the exercise once before offering feedback, information, or modeling how the exercise should be performed. In other words, the warmup section of the lessons was overtaken by teachers talking rather than students vocalizing. Obviously, student singing time could rise if teachers allowed students to attempt exercises multiple times, which in turn allows for longer opportunities to hear students before responding. Then, with repetition, the task may improve.

The repertoire portion of the lessons contained the longest stretches of student singing time in which the song was performed uninterrupted. And while seven out of the ten lesson videos in the study included a full uninterrupted run of the song being worked on, three of the ten teachers immediately began giving feedback before the song could even conclude and notably, none of the lessons included a full run-through of the song at the end of the lesson to review what was worked on during the lesson. This meant that after receiving the feedback and information given by the teacher, the students were not able to put the pieces back together in context by singing through the piece in its entirety a second time.

Notably, the addition of a second uninterrupted run-through of the student's song could have added a significant amount of student attempt time. Concluding the repertoire portion of the lesson with a complete run-through could also provide an opportunity for the teacher to assess what the student has absorbed and retained from the lesson.

Though the observed lessons spent much of the time on the warmup and repertoire, student singing time was low. While the talking within the lesson was relevant to instruction, the amount of talking nevertheless negatively affected how much the student was able to actually sing. Again, multiple attempts of repertoire could both increase student singing time and provide teachers with longer opportunities to listen before offering feedback.

### Most Versus Least Used Instructional Behaviors

In the analysis of the voice lesson transcriptions, modeling and augmented feedback were tied for the most used instructional behaviors. By far the least used instructional behavior was motivation. The following descrip-

tion from Crocco et. al was used to identify motivational instructional behaviors in the lesson transcriptions:

Motivation: The teacher may engage in behavior intending to motivate the student in the lesson. This may be done by setting goals for the lesson, and outlining the importance/benefit of the task, (e.g., "Great. If you continue to sing it like that it will help you to round the tone much, much more.").<sup>22</sup>

Across the ten lessons observed, there was only one instance in which a student was asked about their progress toward their practice goals. Any other discussion of goals in the lesson transcriptions were of teachers prescribing goals to their students, rather than the students setting their own goals. The heavy use of modeling and augmented feedback provided by the teacher suggests that the master-apprentice tradition remains present in the voice studio. The master-apprentice tradition, or top-down model, places the teacher in the dominant role, imparting knowledge to a student who is an empty vessel. Voice Teacher Travis Sherwood states the following on the use of master-apprentice models in the voice studio:

Contemporary teachers of singers must move beyond the fundamental tenets of the master-apprentice tradition, grounding their teaching in a student-centered philosophy which leads to actions in the voice studio that provide space for agentic students.<sup>23</sup>

Creating space in the voice studio for a student-centered approach can guide students towards autonomy rather than dependency on their teachers for feedback or as a model to imitate. When teachers use their own voice as a model for their students, there is a potential risk that the student may imitate their teacher's voice. Multiple teachers from this pilot study modeled by playing the piano rather than singing; this choice eliminates the risk of students imitating timbre or technique. Additionally, playing the piano provides the added benefit of being advantageous for the teacher's vocal load.

### Critical Thinking and Leading Questions

In all observed voice lessons, teachers posed questions to their students such as, "How did it feel?" or "What did you feel?" Critical thinking questions such as these are important, particularly for singers, as one of the sources of inherent feedback is body or bone conducted sensa-

tions. The ability for singers to identify how a sound feels is vital in reproducing the sound in their individual practice, where augmented feedback from an outside source (such as a teacher or coach) does not exist.

Question twelve from the VTSES targeted critical thinking by asking teachers to rate their agreeability to the following question: “I am able to help my students think critically.” The average score for this question was 4.4 out of five, which equates to the “agree/strongly agree” response. This means that most of the time, the teachers in this study felt confident in their ability to help students utilize critical thinking skills.

However, in the transcriptions of the voice lessons, it was noted that some teachers posed leading questions to their students by phrasing their inquiries such as, “This felt better, right?” or “That felt different, right?” The notable addition of the word “right?” has the effect of implying that there is only one correct answer: “yes.” This can be seen in some of the following examples from the transcriptions given below.

Example 1:

Student: [sung] “lip trill-mi-me-ma-mo mu”  
Teacher: Like I love that. Did you not feel it?  
Student: I think I felt it.

Example 2:

Student: [intones in head voice] “eh, eh”  
Teacher: Better. Do you see the difference? Do you feel the difference?  
Student: Yeah.

Example 3:

Teacher: That was too much, right?  
Student: [nods]

When questioning students, teachers should be wary of leading questions that imply a right answer or that a difference was actually felt by the student. A few examples of questioning that encourage students’ critical thinking skills without leading the student are, “Can you describe the difference?” or “What did that feel like in your body?” Building students’ critical thinking skills is very important because if students are not aware of what they felt, where they felt it or how it felt, they will not be able to recreate the sensation or motor task during their individual practice.

## Deliberate Practice

The voice lesson should provide a template for how the student should effectively practice in between lessons. If students are only singing 25 percent of their lesson and 75 percent of the lesson is filled with teachers modeling, providing verbal instructions or feedback, the student is walking away from their lesson with information rather than action to put into their practice. Recall that learning to sing lives within procedural learning which relies on practice or doing the task, rather than just delivery of factual information.

Most of the observed voice lessons ended with a short conversation. This kind of end-of- lesson chat, which only lasts for a small percentage of a total lesson, can be an opportunity for teachers to provide their students a prescription for practice. Teachers can utilize this time to talk with students about their practice goals or strategies in service of moving students towards a deliberate practice regimen. Anders Ericsson, the author of *Peak: Secrets from the New Science of Expertise*, describes “deliberate practice” differently from just purposeful practice:

First, it [deliberate practice] requires a field that is already reasonably developed . . . Second, deliberate practice requires a teacher who can provide practice activities designed to help a student improve his or her performance.<sup>24</sup>

Teachers are integral in helping students develop deliberate practice routines because they are skilled in the field in which the student wants to learn and can prescribe practice activities to help students improve. Some deliberate practice strategies that teachers could consider are recording the voice lesson and using the recording as a template for individual practice, writing a weekly practice journal that reviews the lesson and reports on independent practice, or the implementation of a practice plan. Discussing the importance of practice and goal-setting at the end of the lesson has the added benefits of increasing the usage of motivational instructional behaviors and focusing on student-centered learning.

## CONCLUSION

The results of this pilot study suggest that when students sing more in their voice lessons, the teacher and

student mutually benefit. Utilizing the tools within this pilot study can provide teachers with objective information to help them decide if their instructional behavior proportions should be shifted in favor of more student singing time. Teachers may decide to increase certain instructional behaviors, such as the “motivation” and “student physical attempt” behaviors which in turn, may encourage students to sing more, thus positively impacting students’ skill acquisition, goal setting, and deliberate practice habits.

The importance of augmented feedback for students has been highlighted in this article, but it should be stressed that augmented feedback is also available as a learning tool for teachers themselves. If teachers record themselves teaching, they can observe how much students are singing, as well as how much modeling, verbal instruction, motivation, and augmented feedback is offered.

By recording and analyzing their own teaching in voice lessons, teachers can compare how much they believe students should be singing with how much students are actually singing in lessons. By completing the Voice Teacher Effectiveness scale, teachers can be provided with insight into the effectiveness of their own voice teaching.

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**MAY 18, 2025**

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*Featuring Alex Schenck, MS, CCC-SLP (she/her) and Ruchi Kapila, M.S., CCC-SLP (they/she)*

*Host: Kari Ragan (she/her)*



The neurodiversity movement promotes the idea that all brains work in different ways and that typical is not better. Neurodivergent brains happen to differ from societal standards. In singers, such differences may contribute to valuable artistic strengths and perspectives. However, standard practices in voice training were not generally developed with neurodivergent singers in mind and may not meet their needs. With guests Alex Schenck and Ruchi Kapila, this NATS Chat will explore neurodivergent perspectives relating to performing voice and the application of neurodiversity affirming principles to voice training.



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