TEACHER VIEWS ON TEACHER VOICE:
ELEMENTARY MUSIC TEACHER PERCEPTIONS OF VOICE USE IN THE WORKPLACE

by

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Date 17 October 2018

Submitted in partial fulfillment of the requirements for the Degree of Doctor of Education in Teachers College, Columbia University

2018
ABSTRACT

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Kimberly Jean Stephenson

Teachers represent a large portion of professional voice users in the United States and the development of poor vocal health has related to their work. Elementary music educators are expected to use their voices in both speech and song and are vocally active for much of their workday. This study investigates elementary music teachers’ conceptualization of their voices, what personal and professional value teachers place upon their voices, and how vocal health may affect, support, or detract from their careers.

In this multiple case study conducted with three participants, a questionnaire addressed background demographics for the teacher and information regarding the music program. An interview collected more in depth data on thoughts and perceptions of voice use. Teachers completed the Voice Handicap Index and Singing Voice Handicap Index and each teacher was observed for one full workday.
Vocal professionalism and caring for the voice’s professional use vary in definition and importance from teacher to teacher. Participants seem more conscious of their physical health than other aspects of professional vocal demand. Participants described themselves as vocal professionals while also engaging in behaviors which did not consistently support sustainable vocal health or hygiene. While each teacher viewed their voice as a professional tool, none had received training in the care of their voices, in what to do if their voice was injured, or in how to use their voices safely while teaching. Each teacher reported mild to no voice handicap on both the Voice Handicap Index and the Singing Voice Handicap Index. This may reflect some degree of label avoidance.

Teachers at the elementary level of music come from diverse backgrounds and teach in widely varying circumstances. Teachers may hold some information on vocal health but may not have been trained in how to use the voice while teaching and may develop habitual practices which are not conducive to a career of healthy vocal production. Increased attention is indicated for the populations who professionally use their voices in both speech and song.
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ACKNOWLEDGEMENTS

It is said, “It takes a village to raise a child.” It also takes a village to complete a doctorate. Thanks to my husband, Kevin, for his support – financial, technological, physical, emotional, spiritual. My daughter, Kyren, for loving me through all the iterations of “It won’t be like this forever.” If I can do this, you can do anything. To the memory of my grandparents, I feel you with me. Grams, so much of this is for you.

My sponsors, Jeanne and Hal, for their time and attention. To Lori Custodero for suggesting a clever yet accurate title for this study. Love to my parents who took a weird child and created a functioning adult, my In-Laws for cheering me on, and my sister, Leilani, who loved me even as she changed and grew herself. To Karl and Belinda who opened their home and April who listened.

Patty: boss and friend. Thank you for supporting me and always finding a way to make it WORK, even when you had to stretch the rules. To my women’s circle: thanks for asking how I was, commiserating, and then telling me, “You can sleep a month from now” so get it done.

Finally, I wish to thank an institution which asked me if I wasn’t too old to undertake a doctorate. I reflected: was I too afraid to take on this level of study with this level of risk at this stage in life? Or was I too content, too comfortable to change? I decided to grow. No one is ever too old to rise to the occasion and come out stronger.

K. J. S.
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Chapter 1
INTRODUCTION

As a public-school music teacher, I often partnered with student teachers. I greatly enjoyed working with them, a satisfaction which led me to the mentoring program in my district. My contact spread from student teachers to novice teachers, specialization change teachers (i.e., middle school band to elementary music), and experienced teachers new to music education (i.e., second grade classroom to elementary music). I served as a mentor and then coordinated a district mentoring program for elementary music teachers. As I collaborated with these educators, I found shared experiences with poor vocal health. Commonly, the symptoms seemed more evidenced in spoken usage than in singing. Student teachers who had studied voice felt prepared to sing but often did not seem to have concrete ideas of what to do with their spoken voice. As novice teachers, this frequently resulted in lost voices, hoarseness, and illness. While the collective public mind advocated for student health (hearing protection, safety equipment for heads and eyes, etc), healthy vocal practice was seldom addressed for students and even more rarely addressed for teachers.

The concept of “Teacher voice” is often used as a punchline, as in, “Don’t make me use my Teacher Voice!” The term invokes the idea of loud, blunt, shrill, an authoritative and/or disciplinary tone. One can find the phrase on coffee mugs, t-shirts, and greeting cards. It is a cultural reference in and around schools. The connotation of “Teacher Voice” is of a volume increase, to trumpet the voice over or through the class.
The concept is pervasive, a simple google search for the term yielded 287,000,000 results ranging from examples in film to bottles of hand sanitizer.\(^1\)

The voice is a microcosm of our physical health, mood, and philosophy, and vocal health represents a resilient, flexible and expressive state of vocal function (Åhlander, Rydell, & Löfqvist, 2012; Jahn, 2013; Kvale, 2007). Vocal misuse or abuse may present as hoarseness, “cracking,” delayed onset or harsh release, reduced range or volume, or vocal failure. Such changes affect a person’s ability to communicate as well as how the speaker is perceived (Kvale, 2007; Lessac, 1967). Injuries due to vocal misuse and abuse are preventable and damage does not need to be permanent (Klickstein, 2009). For vocal professionals, injuries may also determine the length and quality of a career. Once inflicted, damage can not only affect a career, it can end it.

As a teacher, I would struggle with my voice for months on end – pretty much the entire school year. Some days would be worse than others, but I found myself barely making it through each week, desperate for the weekend to recoup my voice. I was frustrated that the tool I needed most to be an effective teacher – my voice – seemed to be conspiring against me. (Kardamis, 2013, para. 4)

This quote is from a web forum for teachers and, given the numbers of comments on the page, the frustration and anxiety experienced seems to be familiar. During the chaotic first years of a teaching career, it is easy for singers to stop thinking as artists, go into a triage frame of mind, and simply “get the job done.” Young teachers may lower their common spoken range to carry an aura of authority,\(^2\) a habit which leads to dysfunction and strain, or speak over the sounding instruments in the room rather than stop rehearsal to address the group. Though poor vocal health affects teachers’ abilities to perform their job, most teachers of my acquaintance do not take off work due to vocal

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\(^1\) Personal web search, 18 June 2018.

\(^2\) Personal observation as mentor and partner to student teachers during my 17 years teaching in public schools, and personally observed experience from my transition to teaching at the collegiate level.
injury, choosing instead to work in spite of it. “Teacher Voice,” for these teachers, may be doing more harm than good.

A common music teacher’s day may resemble the following: arrive at school prior to 7:30 am for a before school rehearsal, tutoring, or duty. Once the school day begins, the classes may come to the teacher’s room back-to-back for two to three hours. Though there is usually a five-minute passing period built into the schedule which allows for changing the instruments, activities, and required postings for each grade level, the duration is malleable as teachers may pick their classes up late or drop them off early. The music class groupings may be small to large, between eight to 80 students in a “class.” If the music room has solid textbooks, they will number between 20 to 30 books per room set. Teaching, all day, is based upon singing, chanting, speaking, coordinating dancing, instrument instruction, and classroom management. The music room may have one computer: the teacher’s.

A few classrooms may have students who have Individual Education Plans, which allows them an aid for assistance during the school day. As music often provides the homeroom teacher’s conference period, and the assistant is with the teacher for much of the day, this assistant may or may not come to music with the child. If grade level classes are combined for music, there may be more than one child with special needs who will be in class without their assistant.

Lunch period occurs mid-day, followed by another three or four hours of teaching. The conference period, which may begin the day, occur mid day, or may end the day, may be used for lesson planning, Music / Physical Education (PE) team

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3 Personal observation from my own years as a teacher as well as my years as a mentor to, and mentor coordinator for, music teachers.
meetings, parent conferences or telephone calls, planning sessions with administration, coordination with the district Fine Arts coordinator, grade level meetings for curricular connections between music and other subject matters, observing or meeting with a protégée teacher, instrument repair, or rehearsal planning. As music is a specialized field, the music teacher may be the only teacher coordinating all music program events, rehearsal plans, lesson plans, and curriculum connections with grade levels.

After school yields another duty, an extracurricular ensemble, or both. Once or twice a week, there will be a faculty meeting. After these, other possible commitments may follow, such as district committee meetings, district elementary music meetings, required trainings, school board meetings, PTA performances, talent show or ensemble auditions, campus special events (i.e., “Math Night”), or district events (i.e., Elementary Choral Festivals or PE “Showcase”).

In my public school years of teaching, I spent a large portion of my school year also performing off campus. I sang in churches and temples, participated in festivals, sang with community choirs, and performed in community theatre. I knew my schedule and responsibilities created situations in which I had to make heavy use of my voice, both in and out of school. I had been trained as a singer and I carefully coordinated my lesson plans and work schedule with my performance schedule, hoping to balance use and protect my voice. I knew my work was probably linked to my vocal challenges, yet I seldom took off work when experiencing poor vocal health. Neither did my teacher friends or my student teachers.

I began to wonder, were teachers prepared with the skills to protect their career as they challenged their voices and developed vocational habits? Did they consider
themselves to be vocal professionals? Did they treat their voices as the vocational devices they are? These questions, and others, sent me searching for answers.

**Rationale**

People use their voices to express their emotions, communicate needs, and purposefully interact with others (Karpf, 2006). In studies of vocal professionals, researchers have found teachers use their voices more, and at greater intensities, than vocal professionals who do not teach (Morrow & Connor, 2011; Smith, Lemke, Taylor, Kircher, & Hoffman, 1998; Yiu, 1991). In addition, many teachers overlook personal vocal fatigue and signs of abuse, aggravating damage while both lengthening the recuperation period and increasing the chance of no recovery at all. 20% of sick leave taken by Australian teachers is due to vocal problems (16% in Europe, 15% in the UK) and injury is more likely in teachers of vocally active subjects: Music, Physical Education, language instruction, preschool and primary school. In fact, 80% of teachers may experience vocal problems in their career (Pemberton, Oates, & Russell, 1999).

Eighty percent of teachers “may” experience vocal problems in their career, but there is no data to concretely frame what those statistics currently may be.

While some researchers suggest possible figures, there is no source for comprehensive data on the vocal health of teachers within the United States. School districts in Texas do not provide an option for reporting poor vocal health as a reason for taking days off from work. For that matter, workman’s compensation does not have a

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4 This is based upon personal experience in the field of music education, 1994 – 2011, and personal communication with multiple teachers in multiple Texas cities to corroborate this similarity of omission.
designation for vocal injury.⁵ There is no centralized record keeping of which Texas school districts require health screenings for teachers and, of those that do, if any screen for vocal health.⁶

Research had demonstrated that teachers may be a population at risk and that few teachers seek help when they experience the symptoms of vocal disorder (Assuncão, Bassi, de Medeiros, Rodriguez, & Gama, 2012). Vocal dysfunction has been connected to absenteeism, poor job satisfaction, and, as indicated by long-career teachers, may also be a factor in the decision by affected teachers to leave the profession (Smith et al., 1998; Szymanowski, Streitel Borst, & Sataloff, 2004; Van Houtte, Claey, Wuyts, & Van Lierde, 2011). Elementary music teachers teach multiple classes representing multiple grade levels, incorporating singing and instrumental use, and often teach additional extracurricular ensembles or activities and this environment poses a uniquely demanding vocal environment (Morrow & Connor, 2011; Smith, Sandage, Pascoe, Plexico, Lima, & Cao, 2017; Solberg & Duax, 2000).

Teachers are gaining recognition in some medical and artistic communities as vocal professionals (Sataloff, 1991), a group including singers, actors, politicians, receptionists, telephone operators, clergy, and physicians. Sataloff suggests the nature of vocal professionalism demands both the encompassing of a wide range of specialized vocal needs as well as requiring endurance and quality of voice for a continued career. Rather than originating from simple and rampant abuse, prevalent vocal disorder may have deeper roots. Morrissey allowed a more personal look at what happens when a

⁵ Personal communications with the Division of Workers’ Compensation Central Office, Austin, Texas, March 2015-April 2016: “The closest is throat. They would have to choose ‘swollen’ or ‘bruised’ or maybe ‘sprained.’”
⁶ Personal communications with the Division of Workers’ Compensation Central Office, Austin, Texas, March 2015-April 2016: “You would have to contact each district and ask.”
teacher develops vocal problems, saying, “A loss of the voice— is much more than the loss of a communicative tool. For me, the loss— is devastating to my quality of life. My voice is who I am” (Morrissey, 2013, p. 153).

Problem Statement

Educational systems focus upon teaching safe and healthy vocal practices to music students, providing guidelines for teaching students to be aware of safe vocal practice and awareness of vocal health, and on the necessity for healthy vocal practice for singers as they perform. Elementary music teachers represent a unique population as the profession demands high degrees of both speech and song. Until now, little research has been focused upon understanding how these teachers think of their voices. There is a need for methodical examination of what personal and professional value teachers place upon their voices, and how vocal health affects, supports, or detracts from their career in the classroom. The connection between the presence of vocal symptoms, any perception of those symptoms, and perceived impact of those symptoms upon teachers’ lives is a needed step, allowing for the creation of meaningful and useful guidelines and practices for healthy voice use by these professionals, standards and methods for rehabilitation for current teachers which are understandable and supportable by their administrations and school districts, and preparatory training for teachers to come.

If teachers connected the circumstances of their profession with their voice use in the workplace, then this understanding could be expected to be evidenced in both their expressed perceptions of their voice as well as in observable behavior. Teachers

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7 Personal experience while serving upon multiple textbook adoption and curriculum development / scope and sequence committees, 1994-2011, in the state of Texas. At the university level, this is required in accredited programs (National Association of Schools of Music, 2014), which will be addressed later.
considering themselves vocal professionals and the voice an important tool of their classrooms may demonstrate awareness the degree of vocal use which is required, of their concepts of what their voice is, how they use it, and how they feel about the way they professionally use their voices.

As professionals who are active in their field, the participants in this study will allow a first glimpse into an experience which has not yet been specifically addressed. Previous studies have investigated health issues and known behaviors, observed behaviors in the classroom setting, have researched backgrounds, and have speculated about beliefs (Åhlander et al. 2012; Assuncão et al., 2012; Bernstorf & Burk, 1996; Cantor Cutiva, Vogel, & Burdorf, 2013; Cutiva & Burdorf, 2016; Doherty & van Mersbergen, 2017; Ferreira et al., 2010; Fischer & Scott, 2014; Giannini, Latorre, Fischer, Ghirardi, & Ferreira, 2015; Hackworth, 2007; Hackworth, 2009; Hackworth, 2010; Hunter & Titze, 2010; Kuchler, 2012; Lyberg-Åhlander, Rydell, Löfqvist, Garcia, & Brunskog, 2015; Morrissey, 2004; Morrissey, 2013; Morrow & Connor, 2011; Munier & Farrell, 2015; Natour, Sartawi, Al Muhairy, Efthymiou, & Marie, 2015; Nerriere, Vercambre, Gilbert, & Kovess-Masféty, 2009; Noordzij, Garrett, & Ossoff, 2008; Rodrigues, Zambon, Mathieson, & Behlau, 2013; Roy, Ray, Thibeault, Parsa, Gray, & Smith, 2004; Smith et al., 1998; Smith et al., 2017; Solberg & Duax, 2000; Szymanowski et al., 2004; Vanhoudt, Thomas, Wellens, Vertommen, & de Jong, 2008; Van Houtte et al., 2011; Wijck-Warnaar, Van Opstal, Exelmans, Schaekers, Thomas, & De Jong, 2010; Yiu, 2002). This study will attempt to combine these concepts and provides a small snapshot of what may be the experience of a large population at risk, a coordination of concepts regarding teachers who use their voice for both speech and song.
Purpose

The purpose of this study is to investigate how teachers describe their vocal practices and how they understand the complexities of their voice as an occupational tool. Results of interviews and observation will provide first-hand experiences, clarifying perspectives and practices as experienced by a population. These results have value in advancing knowledge of vocal health, furthering an understanding how teachers feel about their vocal health, and to enriching thought as to how to communicate with teachers about the importance occupational vocal health can play in the health of their careers.

Limitations

This multi-case study encompasses several limitations, some which are common to case study research, qualitative research, and some which are specific to this specific case study design. Thought has been given to minimizing the impact of these limitations as well as to reflection upon how these limitations might be addressed in future research. Two of the primary criticisms of qualitative research are researcher subjectivity and lack of data generalizability. Researcher bias, arising from personal and professional practices, expectations, experiences, and interest, can affect all aspects of research: instrument design, data collection, the framework of results, and how those results are interpreted and communicated. The most prominent limitation to this study is the potential bias and subjectivity found within my multiple decades as a music teacher. My career (Kódaly certification, voice as my primary instrument, and my experience teaching, mentoring,
adjudicating) have made me sensitive to changes in the voice and vocalization patterns. In this way, my bias may serve as a strength.

Any time researchers request participants reply in order to participate, the self-selection process includes a degree of response bias (Doherty & van Mersbergen, 2017). Individuals with interest or experience in the research topic may be more likely to act. In this study, participants may have an interest in teacher vocal health or may have experienced poor vocal health, or vocal illness or injury.

This study was not focused upon gender issues, emotional or mental health considerations, social or physiological differences between males and females, critical health issues, or power structures within schools. While each of these does impact the perception of vocal health and vocal practices in the workplace, these topics were deliberately excluded to constrain the study’s scope.

This research was focused upon elementary music as teachers at this level use their voices to communicate via speech as well as to model, lead, and provide guidance in song. The teachers each taught Kinder through the 5th-grade classes of general music. The selection is not completely homogeneous as the teachers vary on age, gender, years of experience, educational background, and primary instrument(s) of study. This study excluded teachers who were part time or who taught at campuses with restricted (K – 2nd, 3rd – 5th) or expanded (PreK – 6th) grade levels, private school teachers, grade level teachers, PE teachers, and teachers of middle and high school.

Understanding these limitations, I took the following steps. I have readily admitted the research goals and my assumptions and stated them frankly. I provided participants with a glossary of terms, establishing a common vocabulary for
communication. Transcripts were member checked and reviewed against the digital recording. Codings were reviewed via recursive analysis, a spiraling method of revisitation and refinement.

While this narrowed participant group of three full time elementary music teachers does not lend itself to generalization to other populations, it is my hope the resulting information from the findings may be transferrable as experiences and situations many teachers encounter. Other elementary music teachers may gain insight from these everyday experiences. Other subject areas (Art, PE) teach multiple classes at a time, or coordinate large groups. Other levels (middle school choir, high school choir) have long schedules with extra rehearsals and duties and are called upon to speak as well as sing. Future research may replicate this study or design studies with larger populations or differing foci which may yield generalizable results.

**Research Questions**

This study will represent applied ethnographical research through a constructivist paradigm, illustrating the epistemology of the awareness and insights teachers hold regarding their occupational voices in comparison with observations of teacher vocal practice. Constructivism suggests individuals create knowledge out of their experiences, learning as they live and creating personal understandings (Bloomberg & Volpe, 2016). The research within will take a focused look at such subjective understandings in elementary music classroom, asking:

1. How do elementary music teachers describe their occupational vocal practices?
2. What perceptions do elementary music teachers have of their environment, including the:
   a. professional demands placed upon their voices,
b. acceptable levels of vocal health, and
c. the status of their voice as a professional tool?

**Conceptual Framework**

Teachers’ vocal health practices come from a set of background knowledges, states, beliefs, and understandings (Doherty & van Mersbergen, 2017; Hackworth, 2006; Hackworth, 2009). Existing knowledge of vocal health and care of the voice, the physical environment in which a teacher works, professional demands, job requirements, and a teacher’s physical and emotional health combine. The result is a teacher’s perceptions of acceptable vocal health practices, an amalgamation of experiences, beliefs, prior knowledge, and understandings of expected usage / vocal rigor. Those combined internal concepts yield two interactive externalized areas: what teachers report as vocal practice and what teachers can be observed doing (i.e., the observable vocal practice of teachers).

**Definitions of Key Terminology**

Some terms within this document may present different meanings depending upon context (Appendix A, Appendix F). These terms narrow focus and / or specifically describe vocal events, teacher experience, and / or observation in the field. Providing a glossary of key terminology supports mutual frames of reference and common ground for understanding, and may improve the value of the study within differing populations of interested readers.
The following chapters present a review of the literature in the field, a comprehensive look at the methodology of this study, a description of the study results, a discussion of study results, and conclusions and recommendations for further action. Each of these forwards the goal of specifying attention upon teacher vocal health within
the field of music education. There is a lack of applied focus in this area and the lack is even greater in the subpopulation of elementary vocal teachers, a level at which the training of the teachers is diverse and inconsistent, and a profession in which vocal demand is high.

While prevention is preferable to triage, this topic may only be truly framed with more research. Understanding and defining the state of awareness which teachers currently possess is necessary to understand the teacher’s perspective. Understanding the perspective of occupational vocal health may help protect current music teachers as well as those to come.
Chapter II

LITERATURE REVIEW

Introduction

The purpose of this multiple case study was to probe the perceptions of vocal health held by elementary music teachers and to observe teachers’ vocal use during their work. Particularly, research focus is needed on how music teachers consider their voices, what personal and professional value teachers hold for their voices, and the effects vocal health play in teachers’ careers.

This review will focus upon the field of teaching and, more narrowly, upon the subgrouping of music teachers at the elementary level of kindergarten through fifth grade instruction. This focus is relevant as teachers at this level use their voices to communicate via speech as well as to model, lead, and provide guidance in song. Note: from this point on, the term “music education” is to be understood to represent the elementary level music teacher.

Approximately 25% of the workers of the United States are occupational voice users, professionals who rely upon their voices to perform their work, and 16% of occupational voice users are teachers (Hunter & Titze, 2010). 50% of teachers have described vocal issues as a “chronic source of stress” (Sapir et al., 1998, as cited in Hunter & Titze, 2010). Despite these statistics, teachers seem uninformed about vocal health (Kuchler, 2012). As occupational voice users, teachers should know vocal injury is preventable. More, understanding vocal health to be beneficial, manageable, and
reasonable could improve health and career satisfaction for many individuals within this profession.

Regulatory guidelines are in place to support worker health and both rules and laws exist which provide guidance and support for employees who are injured while at work (“Noise exposure guidelines,” 2004; “Noise hazards in schools,” 2009; Occupational Safety, n.d.; Texas Workforce, n.d.). Most of these are related to excessive noise, but literature links noise to health effects other than the loss of hearing (Bernstorf & Burk, 1996; Benninger & Murry, 2008a; Cantor Cutiva et al., 2013; Giannini et al., 2015; Lyberg- Åhlander et al., 2015; Munier & Farrell, 2015). These linkages may be easily transferable to classroom situations and, from there, into the subgrouping of the music classroom, where a unique set of teaching experiences may result in a compounding of environmental stresses and an increased risk for vocal damage.

Seventy-one percent of teachers, in comparison to 54% of nonteachers, were likely to describe symptoms of poor vocal health when surveyed (Cutiva & Burdorf, 2015). While 68% of nonteachers who previously experienced vocal problems had indicated a return of symptoms, 81% of teachers did so (Roy, Ray, Thibeault, Parsa, Gray, & Smith, 2004) and 77% of teachers reported prolonged symptoms, with an average duration of 11.5 years (Smith et al., 1998). Though living with ongoing vocal dysfunction has been likened to experiencing a chronic medical condition (Hunter & Titze, 2010; Szymanowski et al., 2004), research reveals a disturbing contrast between the number of teachers who indicate having experienced vocal problems and those who report those experiences. Music teachers may be vocally active up to 90% of the teaching day (Solberg & Duax, 2000) and as many as 100% of music teachers, in comparison with
60% of classroom teachers, reported the experience of vocal disorders (Morrow & Connor, 2011). Studies often address either the artistic vocalist (one who sings, professional performance) or the professional voice user who does not engage in singing (teachers, receptionists, etc.), but not this specific population who does both (i.e., uses both the speaking and singing voice in daily work).

Research terms included combinations of the following: vocal or voice, health, teachers, classroom, elementary, music, music education, speech, singing, problems, disorders, use, abuse, dysfunction, hoarseness, complaint, injury, damage, prevalence, awareness, perception, throat, occupational safety, occupational injury, discomfort, hygiene, dysphonia, aphonia, and handicap. Preference was given to works in English and, in large part, from the United States, though studies have taken place in other countries. Work which had been peer reviewed or published by the government or a professional association was considered a priority. Research was to be published within the last six to ten years, with some research dating back 15 to 17 years to relay the results of landmark studies.

This review will not address teachers at the secondary or collegiate level; private teachers or teachers in private or charter schools; prevention, training programs, or the rehabilitation of voices; social aspects of power structure regarding gender in teaching; administration support or practices; age or aging specifics; room and building acoustics; or vocal amplification. Though many of these ideas are highly applicable and worthy of study, there was a need to refine and focus the parameters of this research project.

Teachers are a population at risk and few teachers seek help when they experience the symptoms of vocal disorder (Roy et al., 2004; Szymanowski et al., 2004; Van Houtte

1 Definitions for all terms are found within the glossary of terms, Appendix A.
Vocal dysfunction has been connected to absenteeism and poor job satisfaction (Assuncão et al., 2012; Smith et al., 1998; Szymanowski et al., 2004; Van Houtte et al., 2011). Vocal health, as indicated by long-career teachers, indicates vocal dysfunction may also be a factor in the decision to leave the teaching profession (Assuncão et al., 2012; Smith et al., 1998; Szymanowski et al., 2004; Van Houtte et al., 2011). While the literature about vocal dysfunction for teachers is growing, as is research dedicated to the field of music education, research specifically directed toward the elementary music teachers, teachers who use both speech as well as song, is less common. For these teachers, chronic dysphonia could result in a compromised, or abandoned, career.

**International Focus upon Occupational Risk**

In 2013, Cantor Cutiva, Vogel, and Burdorf published a landmark literature review in the field of teacher vocal health. Represented studies met subject matter requirements, methodological criteria, and were published in English in peer-review journals. The 23 resulting publications represented research in Sweden, Italy, Taiwan, Hong Kong, Brazil, Iceland, Spain, Poland, Belgium; eight studies from the United States; three from the Netherlands; and three from Finland (Cantor Cutiva et al., 2013). Each study represented quantitative research featuring cross sectional studies in teacher voice disorders and, regardless of the requirement of publication in English, the results demonstrate a growing international recognition of teachers as vocal professionals and relevance for their vocal health.

I also found international interdisciplinary work within this field. Research represented England and Brazil, Brazil, Jordan, Ireland, Sweden, Netherlands, and
Belgium. The body of research in this field suggests, rather than originating from simple and rampant abuse, prevalent vocal disorder may have deeper roots and these roots exist within schools and societies regardless of nationality.\textsuperscript{2} The situational underpinnings of teacher vocal health are as rich and complicated as vocal health itself. Classrooms may frequently be louder as well as less acoustically sound, recorded sound may be more powerful within the spaces, ambient noise may be more prevalent, discipline may be more challenging, and interested parties may simply be more aware now than in the past. As such, it is important to begin framing the situations surrounding teachers and their vocal health in supportable, definable ways.

**Defining and Describing Poor Vocal Health**

The publications represented in Cantor Cutiva and colleagues’ 2013 systematic literature review denoted widely varying prevalence estimates of voice problems for teachers.\textsuperscript{3} Several authors within the review suggest the prevalence is not well described and one reason may be the varied definitions of “voice problems” (Cantor Cutiva et al., 2013, p. 144). Literature definitions represent a spectrum from the vague (“Have you felt too tired to speak during the past two weeks?”) to the medically specific (“aphonia” and “edema”) (Cantor Cutiva et al., 2013, pp. 151-153).

Not all who experience vocal difficulty may have the ability to describe their symptoms without guidance (Sataloff, 1991). For example: “Tiredness,” as conceptualized above, may describe a variety of physical and emotional conditions. To

\textsuperscript{2} A study in Brazil suggests a possible term which could be used to describe the experience of vocal illness and injury by occupational voice users, “Dysphonic Occupational Syndrome” (Almedia & Pontes, 2010).

\textsuperscript{3} Collected findings of 4.4% - 90% of teachers reported the experience of “vocal problems” in one form or another within varying time frames of recollection (Cantor Cutiva et al., 2013, p. 143, 144).
date, literature in the field seldom provides a definition for “voice disorder” or “vocal dysfunction” (Cantor Cutiva et al., 2013; Szymanowski et al., 2004). Even if provided, definitions are seldom standardized. Researchers, teachers, and third parties such as employers, doctors, and therapists, need a common vocabulary to clearly describe vocal dysfunction.

Symptoms experienced may include (but are not limited to) the following: loss of voice (“aphonia”), breathiness, a perception of heat or discomfort in the neck or throat, changes in speaking or singing tone quality (“timbre”), discomfort in the neck or throat while speaking or singing, impaired voice quality (“dysphonia”), loss of vocal range, difficulty in onset or release of sound, vocal fatigue, hoarseness, impaired or lost vocal projection, a perceptions of weakness in sound or energy in the voice, changes in resonance, and changes in ability to vocalize loudly or softly (“volume disturbance”) (Benninger & Murry, 2008a; Cohen et al., 2007; Cantor Cutiva et al., 2013; Hackworth, 2007; Jacobson et al., 1997; Miller, 2004; Rodrigues et al., 2013; Sataloff, 1991; Sataloff, 2017b; Solberg & Duax, 2000; Szymanowski et al., 2004; Van Houtte et al., 2011; Wilder, 2006). Definitions for these and other terms are in the glossary of terms, Appendix A.

Risk Factors for Teachers

Associations between factors, both work-related and individual, and disorders of the voice seem to be independent of study population size or design (Table 1). Research results disagreed upon the relationships between working conditions and the incidence of teacher voice disorders. A 2010 study proposed some unfavorable habits may be associated with poor vocal health, such as experiencing fatigue and yet continuing to yell,
refraining from water intake, or loud speech regardless of discomfort (Ferreira et al., 2010). Researchers agree on one point: risk factors affecting teachers’ vocal health are numerous and diverse (Doherty & van Mersbergen, 2017).

Studies on class size and voice disorders have resulted in opposing findings (Cantor Cutiva et al., 2013). Kooijman et al., (2006; as cited in Cantor Cutiva et al., 2013) proposed teachers with large class sizes had approximately three times the occurrence of voice disorders than teachers of smaller classes. Åhlander et al., (2010), however, found teachers with larger class sizes were less likely to report [emphasis added] voice disorders than teachers with smaller class size. This may be due to contractual expectations, administrative power structures within the school, or other job conditions. Further study in this area is warranted.

Noise and acoustics are commonly connected to the concept of vocal disorders for teachers. In the guidelines for design and construction of schools (Acoustical Society, 2010, p. vii), the Acoustical Society of America (ASA) describes the importance of acoustical design in this way:

> It is essential that both architectural and mechanical design provide good acoustical characteristics for classrooms and other learning spaces in which speech communication is an important part of the learning process. Excessive background noise or reverberation in such spaces interferes with speech communication and thus presents an acoustical impediment to learning. With a classroom having good acoustical characteristics, learning is easier, deeper, more sustained, and less fatiguing. Teaching should be more effective and less stressful with well designed acoustical characteristics in a classroom. There can be more verbal interaction and less repetition between teacher and students when spoken words are clearly heard and understood. (Acoustical Society, 2010, p. vii)

The ASA connects the nature of physical conditions and physical design with learning outcomes and effective teaching. Other studies have moved beyond this and begun investigating the connection between acoustics and teachers’ vocal experiences.
Cutiva and Burdorf (2015) visited multiple locations within multiple schools to complete measurements of physical working conditions, and then compared these concrete measurements with self-reported information from teachers who worked at those campuses. Researchers only had permission to take these measurements when class was not in session, such as on weekends or after hours, removing any realistic description of population noise and the ambient sounds found within an active building. Also, though multiple locations were measured, the recorded measurements were averaged. This both negates the possibility of varied teacher experiences within the building as well as any meaningful representation of extremes. Results of this research did find physical conditions could be associated with voice symptoms (Cutiva & Burdorf, 2015), but the nature of the study (off-peak and averaged measurements) may have invalidated these findings.

Results suggested voice symptoms were more strongly associated with poor acoustics than with noise itself. The researchers noted voice usage in such environments would require teachers to repeat themselves to be understood, increasing vocal work load. These findings support the findings of other studies where teachers used their voice three times more often than non-vocal professionals, use their voices with loud intensities half of the time (Ferreira et al., 2010), and describe vocal load as a major cause of voice dysfunction in education (Åhlander et al., 2012; Bernstorf & Burk, 1996; Hunter & Titze, 2010; Lyberg-Åhlander et al., 2015).

Assuncão et al., (2012) also completed a quantitative, non-experimental study which assessed noise in the classroom, in the school, and outside of the school. The aim was to determine the percentage of teachers who reported a medical diagnosis of
dysphonia and to measure associations between individual and contextual factors and the
diagnosis. They found prolonged use of the voice and environmental factors such as
ambient noise, poor acoustic design, and poor air quality affect the type and intensity of
phonation, resulting in vocal over-loading by the teacher.

The Occupational Safety and Health Administration (OSHA) differentiates
between noise and vibrations, specifying that “vibrations” are defined as fluctuations in
pressure in the air that are detected by the ear and classified as sound. “Noise” is also
defined as air pressure fluctuation detected by the ear but is classified as unwanted sound.
Both, when occurring at high levels in and over long periods of time, may be damaging to
people. OSHA sets a legal boundary on noise exposure at a permissible exposure limit of
90 decibels (dB) per worker for an eight hour day. After finding the OSHA limit was
resulting in worker hearing loss, the National Institute for Occupational Safety and
Health (NIOSH) made a sound exposure recommendation for workers lower than this,
suggesting an average of 85 dB per eight hours of work (Occupational Safety, n.d.).

The Texas State Office of Risk Management posts a non-technical rule of thumb:
“If it is necessary to speak very loudly to be understood” then the work area has
excessive noise levels (Noise exposure guidelines, 2004). The New Jersey Educational
Association (NJEA) stipulates school noise is worsened by overcrowding, open floor
plans, noisy areas near instructional spaces, and hard or high ceilings which create echoes
(“Noise hazards in schools,” 2009). Cantor Cutiva et al., (2013) noted several work-
related factors could be consistently associated with voice disorders, including high level
of noise in classrooms, and demonstrated that teachers who perceive high levels of noise
in their classrooms consistently reported more voice disorders than teachers who did not perceive such working conditions (Table 4).

In a 1998 study, Smith, Lemke, Taylor, Kirchner, and Hoffman used a self-administered questionnaire to collect data such as environment, habits, and schedules of teachers to correlate voice problems with work behaviors. Results identified the high vocal work load demanded of teachers:

Eighty-three percent of teachers felt the need to speak louder in the classroom than they would during a normal conversation and 48% the need to speak over background classroom noise. The average number of classes taught per day was over six with almost 5 hours of continuous teaching each day. This amounted to an average of 6.3 hours of talking at school each day and almost two of those hours entailed talking over background classroom noise. Teachers reported an average of 2 hours and 20 minutes of quiet talking and an average of over 2 hours of loud talking and they shouted over a half hour daily. (Smith et al., 1998, p. 483)

Dosimetry, defined as “the accurate measurement of doses” (“Dosimetry,” 2007), is an unobtrusive method for the monitoring of voice use via skin disturbance. OSHA utilizes dosimetry to measure environmental sound exposure. Bernstorf and Burk fit participants with dosimetry equipment to record one second bursts of ambient sound periodically through the school day (Bernstorf & Burk, 1996). As the teachers changed locations in the schools, different areas were measured, providing a much more realistic measurement of the teacher’s experience than in Cutiva and Burdorf’s study (2015). Sound levels were next correlated with the results of a vocal health and conservation survey taken by teachers. Recorded levels averaged from 80 dB to 90dB per one second recording burst. Researchers noted a positive correlation between scheduling factors and the average maximum noise level (Bernstorf & Burk, 1996, p. 380) and the maximum dB level correlated highly with the pathology scores generated on the survey.
### Table 1

**Risk Factors which may Influence Teacher Vocal Health**

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Literature reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background noise</td>
<td>(Benninger &amp; Murry, 2008a; Bernstorf &amp; Burk, 1996; Giannini et al., 2015; Lyberg-Åhlander et al., 2015; Munier &amp; Farrell, 2015)</td>
</tr>
<tr>
<td>Conditions of employment and payment</td>
<td>(Betancourt, 1999 &amp; Eurofond, 2011, as cited in Cantor Cutiva et al., 2013)</td>
</tr>
<tr>
<td>Emotional stress</td>
<td>(Giannini et al., 2015; Morrissey, 2013; Lyberg-Åhlander et al., 2015; Rodrigues et al., 2013; Saniga &amp; Carlin, 1991, as cited in Bernstorf &amp; Burk, 1996)</td>
</tr>
<tr>
<td>Exposure to irritants</td>
<td>(Benninger &amp; Murry, 2008a; Sataloff, 1991)</td>
</tr>
<tr>
<td>General health – compromised health due to lack of sleep, difficulty performing work due to lack of sleep, inability to sleep due to work-related stress</td>
<td>(Ferreira et al., 2010)</td>
</tr>
<tr>
<td>General health – dental disease, reflux laryngitis, hearing loss</td>
<td>(Sataloff, 1991)</td>
</tr>
<tr>
<td>General health – fatigue, stress, diet</td>
<td>(Morrissey, 2013)</td>
</tr>
<tr>
<td>Inadequate preparation for vocalization</td>
<td>(Benninger &amp; Murry, 2008a; Sataloff, 1991)</td>
</tr>
<tr>
<td>Lack of regular medical care</td>
<td>(Assuncão et al., 2012)</td>
</tr>
<tr>
<td>Poor technological resources</td>
<td>(Assuncão et al., 2012; Da Costa et al., 2012)</td>
</tr>
<tr>
<td>Psychosocial aspects</td>
<td>(Cantor Cutiva et al., 2013; Lyberg-Åhlander et al., 2015)</td>
</tr>
<tr>
<td>Preparing for programs</td>
<td>(Bernstorf, 1992 cited in Bernstorf &amp; Burk, 1996; Benninger &amp; Murry, 2008a)</td>
</tr>
<tr>
<td>Sustained voice use</td>
<td>(Benninger &amp; Murry, 2008a; Bernstorf &amp; Burk, 1996; Cantor Cutiva et al., 2013; Lyberg-Åhlander et al., 2015)</td>
</tr>
<tr>
<td>Teaching experience</td>
<td>(Cantor Cutiva et al., 2013; Giannini et al., 2015)</td>
</tr>
<tr>
<td>Vocal issues – vocalization beyond comfortable range, intense volume level</td>
<td>(Benninger &amp; Murry, 2008a; Lyberg-Åhlander et al., 2015; Morrissey, 2013; Natour et al., 2015; Rodrigues et al., 2013)</td>
</tr>
<tr>
<td>Working environment – dusty classrooms, ambient noise</td>
<td>(Cantor Cutiva et al., 2013; Lyberg-Åhlander et al., 2015; Morrissey, 2013; Rodrigues et al., 2013)</td>
</tr>
<tr>
<td>Working environment – poor acoustics, dry air, large changes in temperature</td>
<td>(Cutiva &amp; Burdorf, 2015; Lyberg-Åhlander et al., 2015)</td>
</tr>
<tr>
<td>Working environment – ventilation and lighting</td>
<td>(Assuncão et al., 2012; Benninger &amp; Murry, 2008a; Lyberg-Åhlander et al., 2015)</td>
</tr>
<tr>
<td>Working with large groups</td>
<td>(Bernstorf, 1992 cited in Bernstorf &amp; Burk, 1996; Munier &amp; Farrell, 2015; Natour et al., 2015)</td>
</tr>
<tr>
<td>Years of teaching</td>
<td>(Bernstorf &amp; Burk, 1996; Cantor Cutiva et al., 2013)</td>
</tr>
</tbody>
</table>
OSHA standards place a regulatory limit on unprotected exposure to noise dose as an average of 90 dB for an eight-hour day (Bernstorf & Burk, 1996, p. 373; “Noise hazards,” 2009). These guidelines specify unprotected workers may not be exposed to maximum noise levels of one second duration at or above 115 dB without hearing protection. The normal conversational level for speech is 65 dB (Schow & Nerbonne, 1989, as cited in Bernstorf & Burk, 1996). This study revealed levels 15 to 25 dB higher than those in the guidelines. A teacher who attempted to communicate over these recorded levels would be sustaining a vocal load with a high degree of volume, intensity, or both, likely more than 80.5 dB (Bernstorf & Burk, 1996, p. 380). As the nature of Bernstorf and Burk’s study was random measurement, there is no information of how long the peaking noise levels lasted or how the noise was generated (1996). The results of this study, however, suggest the Lombard effect which demarks the tendency to increase one’s vocal intensity in response to increased background noise (Sataloff, 1991).

The Texas State Office of Risk Management (TSORM) Noise Exposure Guidelines quote, “Excessive noise can cause permanent damage, yet the OSHA noise standard is one of the most commonly violated standards” (Noise exposure, 2004, para. 3). OSHA requires noise levels be controlled (Noise exposure, 2004, para. 3). If measures for controlling exposure are not feasible, then effective hearing protection is required at no cost to the employee. While these regulations are focused upon hearing, publications are beginning to identify the potential for vocal misuse and abuse in such situations. For example: Assuncão and colleagues (2012) found limited technical equipment and
resources were associated with dysphonia and suggested policy change would be important in preventing teacher injury.

In a local association action plan for noise hazards, the NJEA cautioned that noise affects health in ways other than hearing loss such as increased blood pressure, heart disease, and ulcers. The plan specifically mentions vocal disorders. “Teachers – especially if they must raise their voice to be heard, suffer from a high rate of voice disorders” (“Noise hazards,” 2009). Employees are directed to, “assist staff with noise-related hearing or voice problems” [emphasis added] and, “ensure district complies with the Public Employees Occupational Safety and Health (PEOSH) standard” (“Noise hazards,” 2009).

Data and Reporting

The Bureau of Labor Statistics, a branch of the United States Department of Labor, suggests using data on workplace injury to take action for the prevention of injury (“Using workplace safety,” 2013). Data allows investigators to ascertain and amend the root cause of the situation and to track the employee through recuperation. In a telephone call to the Texas Education Agency (TEA), I learned there are no centralized records collected as to district health screenings of teacher applicants prior to hiring. Each district has independent choice of screenings and the TEA is unaware of any reporting of results to any state agency. Additionally, the TEA is currently unaware of any district requiring vocal health screenings. I was informed the only way to learn these statistics would be to contact each school district in the state and ask (K. Stephenson, personal communication).
In Texas, under worker’s compensation law, “any injury or illness is covered, without regard to fault, if it was sustained in the course and scope of employment” (‘Workers’ compensation,’ n.d., #6). In a telephone call to the Workman’s Compensation Division of the Texas Department of Insurance, I learned such data regarding injury claims cannot be narrowed to vocal symptoms as there is no code specific to the voice. Teachers who did report such injuries would have to select another code which represented the injury such as infection, inflammation, or strain (K. Stephenson, personal communication, 2016). With no code specific to the voice, and no common language for reporting vocal injury, there is no means of tracking this data through workman’s compensation records. Sataloff’s (1991) caution of the need for uniformly descriptive terminology is relevant in this situation, for a lack of uniform terminology makes tracking the vocal injury of teachers a significant challenge, if not impossible, and the compilation of valid data for teacher injury is requisite to the identification, diagnosis, and correction of situations which result in vocal dysfunction in teachers.

The Music Teacher’s Voice

Only two of these studies, Bernstorf and Burk (1996) and Morrissey (2013), focused upon music teachers using voice, and Bernstorf and Burk did not provide information regarding the nature of the sounds measured: student, teacher, or ambient noise. They did note music teachers routinely work with large groups while in preparation of programs, compounding the nature of vocal stress.

Teachers use their voices a great deal, in noisy environments, and under acoustically poor conditions. They must raise their voices to be heard, speak loudly in noisy situations, and / or repeat themselves. Each of these combine, resulting in
symptoms of vocal misuse and abuse. Professional organizations – pedagogical, medical, and civil – recognize the validity of these connections. Morrissey asked, “Has this teacher experienced vocal problems as a result of her professional work?” (2013, p. 4). The clear answer, she suggested, is yes… but do teachers realize they, and their voices, may be at risk?

**A Population at Risk**

In a position paper on the prevention of communication disorders, the American Speech-Language-Hearing Association defines “at risk” as, “the potential to develop a disorder based on specific biological, environmental, or behavioral factors. This term may apply to an asymptomatic population” (American Speech-Language-Hearing Association, 1988). “Asymptomatic” is defined as, “showing no symptoms or signs of a disease or disorder” (“Asymptomatic,” 2003). Within this framework, teachers, as a population, may be considered at risk because the environmental and behavioral traits of this profession bear the potential for development of vocal disorders regardless of the presence or absence of symptoms.

In 2011, Van Houtte, Claeys, Wuyts, and Van Lierde found 51.2% of teachers dealt with a voice disorder during their career. This supported the results of other studies (Roy et al., Thiibeault et al., and de Jong et al.; as cited in Van Houtte et al., 2011). Van Houtte and colleagues observed, “the prevalence of voice disorders reported by teachers was significantly higher than in the control population” (2011, p. 572), which was comprised of non-teaching school personnel. Differences in circumstances and requirements for the population of teachers increases risk for the development of vocal damage. One such circumstance is vocal loading.
Vocal loading, a term used to describe the way means and frequency of use places demand upon the vocal mechanism (Vilman, 2004, as cited by Hunter & Titze, 2010). Hunter and Titze compared the injury and fatigue resulting from vocal loading to a chronic dermal wound, a flesh wound in need of constant repair (2010). Fifty percent of teachers have described vocal issues as a, “chronic source of stress” (Sapir et al., 1998, as cited in Hunter & Titze, 2010). This means approximately 2.96 million individuals in the United States potentially experience ongoing mental effects and/or physical trauma as a result of their career.4

Teachers, as vocal professionals, require, “‘flexible’ voices “to instruct, discipline, clarify, and for attracting interest and attention” (Åhlander, Rydell, & Löfqvist, 2012, p. 2). In 2012, Kuchler supported this, saying:

Teachers strive to find a voice that will please, captivate, command, and satisfy all groups with which they interact including students, colleagues, and their own perception of their voice. Vocal abuse occurs when teachers attempt to use ‘vocal postures’ that do not match their natural vocal abilities, without proper training. Teachers are not trained to use their voice and are not aware that the voice can be trained. (Kuchler, 2012, p. 17)

This raises an important issue: are teachers who experience symptoms of vocal dysfunction giving professional attention to their voices? Further foundational concerns underpin this concept: are teachers aware they use their voices as a professional tool? Do teachers understand how to use and care for their voices?

Views on Voice

Åhlander, Rydell, and Löfqvist (2012) compared teachers with self-reported vocal health problems with colleagues matched with specific criteria in mind (age, gender, and

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4 Based upon the estimate of 37 million occupational voice users within the United States (Hunter & Titze, 2010).
campus) in a randomized case-control study. The 31 pairings for this study were constructed from self-reported survey results in which teachers responded to the statement, “I have voice problems.” As the meaning of, “voice problem” was subjective to each teacher’s concept of his or her own voice and what it is to experience vocal health, the results were based upon a degree of bias.

Study participants all underwent examination and assessment of the voice by medical professionals (Åhlander et al., 2012). Results of this study demonstrated that teachers present with symptoms of misuse and abuse regardless of whether the individual reports, or even perceives, symptoms. This is of interest as the finding suggests the control subjects, teachers who report themselves as vocally healthy, either do not view the symptoms as an issue or are unaware of a deficiency (2015, p.15). This supports a similar theory that teachers may consider voice problems an unavoidable professional risk (Roy et al., 2004, and Russell et al., 1998; as cited in Van Houtte et al., 2011).

Teachers may also be unfamiliar with vocal health practices. This raises the subject of individual perception.

**Issues of Perception**

In 2012, Kuchler conducted a study in which teachers completed a questionnaire on vocal hygiene and next attended a workshop which covered vocal care, use, and hygiene. “Hygiene” is defined as the conditions and practices which serve to promote or preserve health (“Hygiene,” 2007). After the workshop, participants completed a second questionnaire which measured changes in individual awareness of vocal hazards. Participants responded poorly to questions regarding the definition of vocal abuse and vocal hygiene, suggesting the teachers were unaware of basic vocal care concepts.
In Kuchler’s study (2012), less than 50% participants answered one half of 20 vocal health statements correctly. Of all the questions, only two were answered correctly by all participants: “Smoking affects voice” and, “Screaming can harm the voice” (p. 50). The responses of most concern were those focused upon behaviors and the results of poor habits (p. 51): “Frequent or long-lasting sore throats always indicate a voice disorder’ (5% correct)” or, “Loud whispering has less of an adverse effect on voice than moderately loud speaking (44% correct)” (p. 52).

Rather than possessing distorted information, teachers seemed to be uninformed of vocal health and hygiene concepts, a finding which is supports in similar research (Kovacic, 2005, as cited by Kuchler, 2012, p. 46). As Kuchler (2012) observed, “Teachers naturally engage in both healthy and unhealthy vocal behaviors, but they might choose healthy behaviors if they understood the consequences of the negative behaviors” (p. 52). As only a small period of misuse or abuse may result in injury to the vocal mechanism, the potential results of cumulative injury over the course of a career are great.

If Teachers Were Aware

As with any aspect of physical health, prevention is preferable to recuperation, and yet the individual must be aware of what a healthy is before he or she can be responsible for preserving it. Likewise, if teachers have a basic understanding of how vocal health may be maintained, they may be better able to protect this vitally important aspect of their career. Many aspects of healthy vocal production are easily identified and enacted.
One aspect of healthy vocal behaviors addressed in this workshop were non-verbal strategies for classroom management (i.e., facing the class when speaking, proximity to noisy students, and refraining from competing for sound dominance). Questionnaire responses revealed teachers found these valuable. Relaxation, breathing, and control of vocal intensity, however, were viewed as neither memorable nor valuable by workshop participants. Seen by speech-language pathologists as essential features of vocal health, the lack of value teachers gave these concepts frames the potentially untrained and unaware state within the profession.

The occupational use of voice, when compared with the non-occupational voice, resulted in more frequent instances of elevated pitch and intensity. For teachers, elevation of pitch and vocal intensity tends to intensify throughout the day (Hunter & Titze, 2010), both resulting from increasing muscular tension in the throat. Inefficient vocal techniques, prolonged occupational vocal use, and vocal work in loud situations, place teachers at risk for symptoms (Van Houtte et al., 2011) such as aphonia, edema, and nodules (p. 570), and / or hoarseness, loss of voice, diminished pitch, and diminished intensity (p. 572). If relaxation and control of intensity are essential features of vocal health, and teachers’ occupational voices demonstrate the opposite, why would teachers view these topics as neither memorable nor valuable? Teachers may be unaware these experiences are symptoms, these symptoms are unnecessary and avoidable, and their lifestyles – both occupational and personal – could improve if the voice is cared for.

Vocal misuse and abuse reduces the quality of instruction teachers can provide. Multiple studies connect vocal dysfunction and absenteeism (Smith et al., 1998; Szymanowski et al., 2004; Van Houtte et al., 2011). Vocal problems are also linked with
reduced perceptions of quality of life (Van Houtte et al., 2011), including adverse feelings regarding their job, their ability to express themselves, their social life, and their futures (Szymanowski et al., 2004), and may question the effectiveness of their performance, their career options, and their ability to perform their job (Van Houtte et al., 2011). Though 18% of teachers during Åhlander and colleagues’ study (2012) who self-reported vocal symptoms had considered a change of career, the case-control teachers who had not reported vocal symptoms had also not described considering such a change. If teachers possessed accurate information about vocal care, use, and hygiene, teachers could act on this knowledge. Such action could diminish the effects, physical and psychological, which result from the experience of dysfunction, including even the consideration of ending a career.

**Voice Training**

Teachers who receive vocal health information and tools for healthy practice may be more likely to take action to protect their vocal health and prevent injury, but the teacher must understand how to care for and use the spoken voice in a professional setting. Only 14% of teachers in Kuchler’s 2012 study reported having any formal voice training. The nature and quantity of training was not asked. For example, what form did the reported training take? Was it a one-hour lecture during an inservice day or a semester-long vocal training course as an aspect of a teacher preparation program? Was the training for singing or for public speaking? Though humans have only one vocal mechanism, the manner of vocal use differs between speech and sung language because the nature of singing is sustained phonation.
In Van Houtte and colleagues’ 2011 study, only 27.8% of the teachers reported having received information about vocal hygiene and vocal techniques. Of those, only 13.5% of the teachers did so during their teacher training. While the populace at large is not likely to have received formal vocal training, an absence of vocal training for teachers may increase a probability for vocal disorders (Smith et al., 1998; Szymanowski et al., 2004).

Though a few university education departments in the United States did once include vocal hygiene and general voice care, including the screening of voices, this aspect of teacher preparation has essentially been eradicated (Kuchler, 2012, p. 8). The seeming lack of vocal diagnosis or evaluation of teacher voices, either pre or mid-career, may play a part in vocal deterioration of teachers. Additional study is needed on the effectiveness of such training for student teachers, novice teachers, and career teachers over time.

**Prevalence**

Teachers comprise the largest subsection of occupational voice users within the United States (Digest of Education Statistics, 2000, Table 4, as cited by Roy et al., 2004). The literature consistently suggests these approximately 3.3 million teachers are at higher risk for occupational voice disorder than other populations. Estimates for the prevalence of voice disorders, both in the general population as well as in the field of teaching, are inconsistent, extending from 4.4% to 90% for teachers and from .65% to 15% for the overall populace (Roy et al., 2004, p.282).

In 2004, researchers performed telephone interviews of 2,531 randomly selected individuals in Iowa and Utah, the largest epidemiologic research into the prevalence of
voice disorders among randomly sampled teachers and the general population (Roy et al., 2004). 1,243 teachers and 1,288 nonteachers participated in the largest comparison of voice disorder prevalence between teachers and nonteachers. Teachers, compared with nonteachers, more often reported a current vocal complaint (11.0% versus 6.2%), reported more voice problems during their lifetime (57.7% versus 6.2%), and had sought clinical assistance for a vocal disorder (14.3% versus 5.5%) (Roy et al., 2004, p. 281). These results validate the concept of teachers, as a population, as likely to experience a voice disorder during their career.

In replication of prior research, Smith, Lemke, Taylor, Kirchner, and Hoffman (1998) provided a self-administered questionnaire regarding vocal problem frequency to teachers and nonteachers in a clinic. Though the frequency was found to be lower in this study than in previous findings, this research confirmed nonteachers report fewer voice problems than teachers. This study also suggests no other profession seeks medical support as often as teachers. More than 16% of the patients in the clinic were teachers, a result which supports previous work by the authors in three other parts of the country (Sapir et al., 1993; Smith, Gray, Dove, Kirchner, & Heras, 1997, as cited by Smith et al., 1998).

The lower rate of each of the other regular patient populations is significant. Actors / entertainers (including singers); sales agents; office managers, secretaries, or waiters—each group represented 4% of those seen at the clinic (Smith et al., 1998, p. 486). The difference between 16% for teachers and 12% for the next three groups combined illustrates the significant proportion of teachers who experience voice problems and then seek treatment. Research has repeatedly demonstrated, however, only a small
portion of teachers who experience dysfunction advance to seek treatment (Roy et al., 2004; Szymanowski et al., 2004; Van Houtte et al., 2011). Hence, the portion of this population who do not seek treatment are a potentially significant number.

**Teachers versus Non-Teachers**

While work factors and health circumstance represented no significant variance between teachers and nonteachers, 71% of teachers were likely to report voice symptoms as compared to 54% of nonteachers (Cutiva & Burdorf, 2015). After narrowing to a subpopulation of individuals who conveyed experiencing a voice disorder in the past, 81% of teachers reported they had developed symptoms again, compared with 68% of nonteachers (Roy et al., 2004).

In a 1998 study, Smith and colleagues found 32% of teachers reported experiencing voice problems as compared with 1% of the comparison group. 77% of teacher reported indicated a prolonged experience of symptoms, compared with 22% of nonteachers. Most disturbingly, the teachers in this study described an average symptom duration of 11.5 years. Yet, despite persistent and acknowledged vocal issues, only 14% of teachers sought clinical assistance. The regularity of symptom increase for teachers in comparison with nonteachers indicates, to quote Smith and colleagues, “There are universal, rather than population-specific, vocally abusive behaviors associated with this occupation” (Smith et al., 1998, p. 487).

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5 No data as to average duration of prolonged symptoms for nonteachers was reported.
Female versus Male

In comparison of vocal health in teachers against a control group of non-teachers, Roy, Ray, Thibeault, Parsa, Gray, and Smith (2004) found the teachers were more likely to be female. This finding was supported by Cutiva and Burdorf (2015) and, in fact, 93.6% of the teacher participants within Ferreira et al.’s Brazilian study in 2010 were female. Data on vocal disorder may not be completely generalizable to the entire population of teachers because the rate of voice disorders for females is much higher than with males (Assuncão et al., 2012; Cutiva & Burdorf, 2015; Ferreira et al., 2010; Hackworth, 2007; Roy et al., 2004).

The connection between sex and voice disorder has been found repeatedly and through many varied methods of research (Roy et al., 2004). Research has demonstrated positive associations for the development of a voice disorder, including being female, being between 30 and 60 years of age, having a family history of voice disorders, being married, teaching more than nine years, and having between 35 to 40 students per class (Ferreira et al., 2010; Roy et al., 2004; Szymanowski et al., 2004).

Studies suggest that females develop occupation voice injury at a higher rate than males regardless of profession (Fischer & Scott, 2014). The rate of voice disorders for women 46.3%, and men, 36.9%, remained consistent across age ranges of participants (Roy et al., 2004). Women also tended to report dysfunction of longer duration than men (Russell et al., 1998; as cited by Roy et al., 2004). As much as 10% of women reported vocal problems which were prolonged (Roy et al., 2004). Another interesting finding is the increasing likelihood for females, in comparison with males, to both report a voice problem as well as to seek assistance (Coyle, Weinrich, & Stemple, 2001; Cantor Cutiva
Explanations vary widely for prevalence difference between sexes. Roy et al. (2004), suggested the presence of structural dissimilarities, such as a female’s shorter vocal folds, a higher fundamental frequency of vocal production, and biochemical differences, might account for some of the differences. These suggestions were echoed by Szymanowski et al. in 2004, Ferreira et al., in 2010, Assuncão et al., in 2012, and Fischer and Scott in 2014. Differences may also be due to reporting bias linked to gender, gender based variances of teaching styles or routines (Assuncão et al., 2012), or to social aspects associated with gender (Ferreira et al., 2010).

As education is a female dominant field, most studies of occupational vocal health have focused upon the experiences of women. Fischer and Scott (2014) aimed at closing this gap by studying male vocal health with a specific focus upon the field of music education. In 2010, 57 teachers each participated for two weeks of data collection utilizing dosimetry. Researchers then calculated voicing as a per-hour percentage and noted average decibel, sound pressure level, and intensity (Hunter & Titze, 2010).

The average fundamental frequency of vocalization is 120 hertz (Hz) for males and 200 Hz for females (Roy et al., 2004). The higher level for females is due to the shorter length of the female vocal folds. This higher fundamental frequency indicates a female’s vocal folds would undergo 40% more collisions than a male’s. Female teachers in Roy et al.’s study (2004) spent 17% of the workday in a vocally active state. This translates to nearly 750,000 vocal fold strikings each workday (Roy et al., 2004), a significant difference in vocal load. This example demonstrates a small physiological difference which yields a
possibility as to why females are 10% more likely than men to have prolonged voice problems (Morton & Watson, 1998; Russell et al., 1998; Sapir et al., 1993; Smith et al., 1998; Vilkman, 2004; Yiu, 2002).

Research also demonstrated, via self-observation, a general perception of overall vocal health by male music teachers (Fischer & Scott, 2014). Medical examinations, vocal recordings and analysis, and researcher observation were not aspects of this research, so reporting bias was possible. The subject, however, is worthy of further research as differences in perceptions of vocal health between the sexes may be important in framing the nature of vocal dysfunction for teachers.

As a female dominated subgrouping within an already female dominant field, music education researchers would be wise to specify differentiations in data between the sexes. Unless accounted for, the imbalance of female numbers over male may otherwise skew the results in favor of disorder frequency. This prevalence would also reflect the change in population majority if a study is completed in a sex-reversed subject specific area, such as secondary band, in which more teachers are male.

**Acknowledgement and Reporting**

While research indicates teachers who experience vocal health, or the perception of vocal health, remain in the profession (Cantor Cutiva et al., 2013; Smith et al., 1998; Szymanowski et al., 2004), only 38% of teachers specifically connected the act of teaching to the development of voice problems (Smith et al., 1998). Interestingly, 39% of teachers had restricted their vocal use in teaching because of voice problems but only 10% of the same population admitted voice problems had limited their ability to perform
their job. This finding supported the results of a previous study (Smith, Gray, Dove, Kirchner, & Heras, 1997, as cited by Smith et al., 1998).

There is an alarming difference between the numbers of teachers who experience symptoms of vocal damage and the number of teachers who follow through, reporting vocal dysfunction. For example, Roy and colleagues (2004) found 14.3% of teachers pursued help in managing their symptoms while 58% reported having previously experienced voice problems. As indicated previously, the rates of reporting vocal dysfunction indicate a potentially large rate of unreported vocal problems in teachers (Roy et al., 2004; Smith et al., 1998).

Numerous reasons exist why teachers may not report vocal symptoms. Taking time off from work might be a challenge, teachers might experience occupational pressure to remain on the job, they might fear the issue is limited to their own experience, doctors may suggest a reduction in voice use, or the symptoms may indicate a need to change professions. Teachers may be concerned poor vocal health could reflect negatively upon their career, they might be unaware of support structures in place, or they may not realize what they are experiencing is even a problem. These possibilities represent a complicated situation and more study is required (Doherty & van Mersbergen, 2017; Roy et al., 2004, 1998; Sataloff, 1991; Smith et al., 1998; Szymanowski et al., 2004; Van Houtte et al., 2011).

**Music Education**

Inquiry into the vocal health of teachers has mostly encompassed a homogenized profession of teaching or compared teaching with the general population. Growing attention has been concentrated upon some subpopulations in music education. The
elementary level, with the professional demand for speech as well as song, remains a unique population.

Hunter and Titze (2010) specified a subpopulation of, “music / theatre instruction,” but did not separate out music education or diversify level. While the researchers say, “It was found that the teachers vocalized at an average of 29.9%,” a rate which they claim validated previous studies (Hunter & Titze, 2010), the results cannot be used to generalize to the population of music educators. Another subcategorization included drama and arts as a “fine arts” population (Smith et al., 1998, as cited by Solberg & Duax, 2000). As these teaching situations are vastly diverse, it is not surprising to know the group was collectively designated low-risk. In this study, physical education was the only high-risk population when compared to other subpopulations. Once again, research which made mention of music education does not allow conclusions to be drawn regarding the field of music education. The authors suggested a need to better frame and understand the unique issues of the music educator and ascertain influences which may place music teachers at risk for the development of vocal disorders.

At the elementary level, teachers use their voices in both singing and speaking activities throughout the entire day. Many teachers often precede and / or follow the main work day with extracurricular instruction, increasing the duration of vocal activity. Considering Solberg and Duax (2000) found music teachers reported staying vocally active for 90% of the workday and 46% of this work was singing, a state of vocal use which represents sustained phonation, these added hours of vocal effort mark a decided difference from others in the teaching field. Returning to the concept of a population at
risk, this narrowed subpopulation of teachers should prove to be at an even greater predisposition for the development of vocal disorders.

Many music teachers had faced more than one symptom of vocal disorder in the past and were also experiencing vocal problems at the time of the survey (Solberg & Duax, 2000). The symptoms named by the teachers sound familiar: fatigue, loss of range, hoarseness, pain, lack of endurance, and breaking of the voice. Had these practicing music teachers received vocal instruction?

The assumption cannot be made that teachers who specialize in vocal instruction have been trained to use their voices to teach. For example, elementary music is rife with teachers who have degrees in instrumental education, who came to the profession from an instrumental performance career, or who previously worked in unrelated fields. Even the vocal major who has been taught to use his voice to sing may have received no instruction on how to healthfully project his spoken words.

**Undergraduate Perception**

To gain insight into the perceived vocal health of undergraduate music educators, Vincent (2007) analyzed the Voice Handicap Index and the Voice Related Quality of Life surveys. Both instruments were designed with vocal disorders in mind. Desiring unbiased self-observations, Vincent adapted the questions into an instrument which made no direct mention of vocal dysfunction. A total of 79 participants, 51 instrumentalists and 28 vocal / music education students, took part in the study.

Results demonstrated an overall increased perception of voice challenges for the vocal group as opposed to the instrumental group which may be in part to the performance demands of study within the department. Responses to the statement, “My
speaking voice frustrates me” indicate a general positive view by vocalists. Vincent cautions, however,

Because the participants in the study were not exposed to the level of voice use required by a regular teaching schedule, they may have been less likely than in-service teachers to experience vocal difficulties. Therefore, the undergraduate music education majors in the current study may not have been as predisposed to exhibit vocal problems that may cause frustration among teachers. (Vincent, 2007, p. 7)

Replicating this study after employment would provide insight into the changes which take place once these experiences are gained and would shed light into the difference between a vocally trained teacher and one without vocal training as they experienced professional rigor.

Music education / vocal students, which reported a higher perception of vocal difficulty, yielded higher means to the statements, “My speaking voice is hard to hear or understand,” “My speaking voice sounds worse at the end of the day,” and, “I cannot speak loudly for a prolonged time” (Vincent, 2007). Vocal majors are likely more aware of voice symptoms and variations of the voice sound and sensation.

Another explanation may be that students within a rigorous performance program may be prone to fatigue and / or overuse but, as the traditional undergrad is young, resilience may allow quick recovery. Symptoms may be habitually ignored due to familiarity, causing injury and dysfunction to become cumulative. Vocally aware as we may assume these students to be, if they are experiencing awareness of unhealthy symptoms and are implicitly trained to expect these sensations, this “awareness” may, in truth, be a state of perceptive ignorance.

While the National Association of Schools of Music (NASM) position statement on vocal health requires healthy practices be demonstrably taught to students (National
Association of Schools of Music, 2014), the nature of this instruction may be inferred as healthy student performance habits which result in a student exiting a program in as healthy or healthier a state as the one in which he or she entered. The same may be said of the cautionary position of the National Association for Music Education (National Association for Music Education, 2014). Undergraduate students may not understand what vocal demands they will experience until they are actively teaching. Do these guidelines address the professional demands placed upon the voices of career novices? Will the concept of “healthy practice” extend to occupational habit?

**Teachers of Music versus Classroom Teachers**

Many aspects of practice and environment play into occupational vocal load for teachers. As Morrow and Connor (2011) indicated, there is little data for the differences which may result in increased risk on behalf of music teachers.

Many school districts require music teachers and classroom teachers to have equal number of minutes of student contact time, but are these minutes commensurate with regard to vocal load for the two groups of teachers? ... Therefore, it is unclear if voice-use profiles and vocal load are, in fact, different between these two populations of teachers. (Morrow & Connor, 2011, p. 367)

Morrow and Connor (2011) sought to isolate the factors which differentiate the vocal experience of these two groups. The study group was small, which makes generalization of results impossible, but the comparison of profile components between elementary music and classroom teachers yielded insight.

All participants were employed as full-time teachers and were paired, classroom teacher and music teacher, on the same campus. Music teachers taught kinder through fifth grade, classroom teachers taught a single grade level between kinder and third grade. Music teachers averaged 475 students and 46 individual class sessions per week while
classroom teachers had a schedule which allowed for some adaptability and averaged 17 students per week (Morrow & Connor, 2011).

On the questionnaire aspect of the study, 86% of music teachers, as compared to 60% of classroom teachers, reported experiencing vocal problems in the past year. One-hundred percent of the music teachers, as compared to 60% of classroom teachers, reported having vocal problems at some point during their career. As none of the teachers had a history of vocal pathology, the comparison illustrates a potential disparity between results of differing vocal load demand (Morrow & Connor, 2011).

The other aspect of this study was the use of an accelerometer which recorded skin vibration to estimate phonation time, fundamental frequency, and vocal intensity. Music teachers averaged a significantly higher mean across all variables, experiencing 48% more phonation time, a significantly larger vocal load than classroom teachers (Morrow & Connor, 2011). As teachers by trade already experience a higher vocal load than other occupations, an increase in load for this subpopulation is significant. Music teachers are charged with vocal use as a central component of their work. To quote the authors, “Classroom teachers were not comparable with music teachers in the degree to which vocal demands were an integral part of the job” (Morrow & Connor, 2011, p. 370).

Hackworth suggests a need to for investigation into other categories which affect a music teacher’s environment, including water consumption; vocal warm-up time; talking over singing, recorded music, or instruments while delivering instruction; the use of non-verbal commands, teaching responsibilities, and details of schedules (Hackworth, 2007). In addition, information regarding the nature of music teacher training – instrumental,
vocal, performance, education – and if the individual had another career before moving into music education, would provide insight into vocal health awareness.

Literature demonstrates vocal health is an important concern. This is magnified in the field of music education, specifically for elementary music teachers. More research is needed in this area as risk for this subpopulation is increased for the development of vocal dysfunction. A better understanding of the situations experienced by music teachers is needed. Even more, understanding the specifics of music teacher perceptions of these experiences is needed. Coordinating these understandings and perceptions with teacher professional practices may improve more than the quality of health for teachers, it may result in improved teacher satisfaction and career longevity.

The Voice Handicap Index (VHI) and Singing Voice Handicap Index (SVHI)

The World Health Organization (WHO) (1980) defines handicap as a social, economic, or environmental disadvantage resulting from an impairment or disability. The term disability represents a canopy under which several concepts rest. Disability represents impairments (physiological challenge), activity limitations (experiencing difficulty when executing a task), and participation restrictions (when involvement in standard life situations presents challenges to an individual) (“Disability,” 2016; Paoliello, Olivera, & Behlau, 2013).

For music teachers, vocal disability may present when an individual is unable to phonate at soft volumes, loses the higher or lower pitches of range, experiences discomfort when speaking or singing, or is unable to sing or speak in non-occupational activities. Voice handicap could be seen as when a teacher chooses to leave their job because they are unable to run rehearsals or manage classroom discipline (Yiu, 2002).
These situations, required as part of teachers’ duties, could be complicated by voice fatigue or dysphonia.

The term psychosocial refers to situations which represent both psychological as well as social aspects (“Psychosocial,” 2016). The psychosocial effects involve mental and emotional states for individuals and an individual’s ability to create and maintain relationships. The Voice Handicap Index (VHI) and Singing Voice Handicap Index (SVHI) are quality of life surveys, each addressing these psychosocial concerns, making the indices significant achievements in the field of vocal health care.

A team of researchers completed a series of three investigations resulting in the development of the Voice Handicap Index (VHI; see Appendix B), a device validated by strong test-retest stability (Jacobson et al., 1997). Items were developed by pooling case history interviews from a seven-year time period and represented patients with diverse diagnoses. Items were sub-grouped into three domains: functional, emotional, and physical. “Functional” designated characterizations of effects potential vocal disorder could place upon participant’s routine. “Emotional” described the feelings in response to potential voice disorder effects. “Physical” verbalized individual expressions of pain, irritation, disorder, or change of voice (Jacobson et al., 1997, p.67).

The responses represented a five-point Likert-type scale with the terms, “never,” “almost never,” “sometimes,” “almost always,” and “always.” Never was scored at 0 and always at 4. Internal consistency was evaluated using Cronbach’s alpha coefficient. Test-retest reliability was found to be strong for both subscale and total scores via a Pearson product-moment correlation coefficient and additional Cronbach’s alpha coefficient (Jacobson et al., 1997, pp. 66-67).
Researchers noted an interesting observation, reporting, “Patients mentioned frequently that they were unaware of the degree of severity of their voice problems until completing the VHI” (Jacobson et al., 1997, p. 69). As previously noted, if teachers were aware of the impact vocal health may have upon their personal and professional lives, they may decide to take action to protect their voices.

A Belgium study of teacher biopsychosocial status connected the concepts of handicap, individual perspective, and subjective judgment of voice and behavior (Vanhoudt, Thomas, Wellens, Vertommen, & de Jong, 2008). “Biopsychosocial” is a term which reflects the complex intersection of social, biological, and psychological behaviors within life events (“Biopsychosocial,” 2009), and the study investigated the backgrounds of teachers without severe voice problems in relation to the behavior choice of not always reporting voice problems (p. 372). The study was a cross-sectional survey using a general voice questionnaire, the VHI, and the Symptom Checklist-90 (SCL-90). Results indicated high VHI scores in combination with high scores on the SCL-90 may indicate a strong psychosocial impact for teachers. This may arise from the intricate interconnections between physical and mental states resulting from experiencing voice problems, and how these play out within a close and watchful community atmosphere in the workplace. Results indicated teachers with a voice handicap were at a greater risk for anxiety when compared to teachers without a high voice handicap. Teaching has high demands of ability in the classroom and this anxiety may prevent teachers from reporting voice problems. Results also indicated a lack of social support while experiencing voice problems may present challenges for teachers, especially if the teachers do not expect help (Vanhoudt et al., 2008, pp. 374-375).
Researchers observed patterns of not reporting voice problems may be related with inefficient thought processes regarding the consequences of vocal health. The resulting inaction could maintain and reinforce injurious behavior patterns: “When teachers experience the professional and social consequences of voice problems, the way they think and act may be inappropriate or insufficient to deal with their voice problems,” (Vanhoudt et al., 2008, p. 375). These results were validated by Wijck-Warnaar et al.’s 2010 study of biopsychosocial impact and coping styles of teachers. In this study, researchers found the coping styles of teachers could be related to problem solving possibilities and may result in increased vulnerability. Explicitly, research indicated less active coping styles and passive reactions would result in high VHI scores. This suggests inadequate coping may lead to patterns which generate repetitive behavior and patterns which lead to chronic disease (Vanhoudt et al., 2008, p. 375).

These studies focus upon the spoken voice. Singers utilize the same mechanism but for sustained phonation. A research team developed and validated an instrument specifically for use with singers experiencing voice problems and modeled the instrument upon the VHI (Cohen et al., 2007). The resulting index is the Singing Voice Handicap Index (SVHI; see Appendix C). This index can discriminate between vocally normal singers and the dysphonic, has test-retest reliability, and demonstrates internal consistency.

As with the VHI, items were compiled from symptoms reported by singers at a clinic and represented diverse diagnoses. Subgroupings of items addressed physical, emotional, social, and economic effects of singing voice impairments (Cohen et al., 2007, pp.402-403). It is important to note these subgroupings were not scored independently.
Researchers noted the VHI may not be sensitive enough for singers. This may be because the VHI overlooks the degree and duration of use which singers employ, a facet addressed within the SVHI.

Several of the same researchers who created and validated the SVHI went on to investigate the factors associated with perception of the impaired singing voice (Cohen, Noordzij, Garrett, & Ossoff, 2008). This test identifies singing teachers as a high-risk population for singing voice problems and suggests further study into voice damage prevention programs and research into the results of such training on reduced incidence of voice problems. In this study, researchers connected the concepts of duration of injury with higher SVHI scores, the presence of physical manifestation of injury (i.e., lesions, cysts, or polyps) with increased SVHI scores, singer’s ability to adapt to voice problems, and the role singing played in patient’s lives with SVHI scores (Cohen et al., 2008).

Sataloff noted, “In many instances, training the speaking voice will benefit the singer greatly… Surprisingly, most singers have not had such training, and they often speak much more abusively than they sing” (2017b, p. 768). Both the VHI and SVHI resulted in increased teacher perception of the degree of voice challenges and gave insights into the psychosocial experiences of individuals with voice problems. Investigating the difficulty experienced when using both the spoken as well as singing voice may unlock new understandings of the experiences of music teachers. Seeking insight into teachers’ thoughts and belief systems regarding their vocal health is also important. Both the VHI and the SVHI may provide these needed insights.
Conclusion

Teachers are coming into more recognition as occupational voice users, professionals which for whom the voice and its use are the foundation of their livelihood. Teachers may be considered an “at risk” population because behavioral and environmental traits inherent to this profession may predispose teachers for the development of vocal disorders. Regardless as to whether teachers recognize or are aware of the symptoms of accruing vocal injury, more than half of teachers are likely to experience voice problems during their career.

Though guidelines and rules are in place which support workers if they are injured while in the performance of their duties, few teachers report the development of vocal problems. Also, only a small percentage of teachers report having received formal voice training. This trend, reflected in research, demonstrates a general lack of awareness of vocal health and hygiene practices. This unfamiliarity presents a disturbing symptom of a larger problem: teachers seem to view the voice as an acceptable casualty of the profession.

Considering the data regarding classroom teachers’ vocal health in comparison with the general population, music education teachers may be at an increased risk to develop vocal problems. Occupational voice users rely upon their voices to perform the requirements of their jobs, and a teacher who experiences vocal dysfunction may not only view her career with a less positive outlook, she may feel she must end her career. As such, protecting teacher voices may be an act of loss reduction in the field of music education.
Though the literature on teacher vocal health and awareness is growing, there is a lack of applied focus within the field of music education, specifically for teachers that use the voice to both speak and sing. The lack is even greater for the subpopulation of elementary music teachers, a level at which teacher training is diverse and inconsistent, and for whom professional voice use may be as high as 90% of the workday (Solberg & Duax, 2000). While prevention is preferable to triage, this topic may only be truly framed with more research. Defining and describing the state of awareness which teachers currently possess is necessary to understand the teacher’s perspective. Learning more about teachers’ thoughts regarding voice use in the workplace is a needed step towards helping teachers protect their voices.

This chapter provided a review of the literature used to create the design, analysis, and synthesis of this study. The following chapter will provide a detailed description of this study’s research design and methodology. The fourth chapter will describe the results of this study. The fifth chapter will describe and discuss the research findings, framing their interpretation within the literature of the field, and the sixth chapter will summarize the study, provide conclusions, and make recommendations for the field and future research.
Chapter III

METHODOLOGY

Introduction

This study represents qualitative research through a constructivist paradigm, a multi-case study of three teachers illustrating the epistemology of the awareness and insights teachers hold regarding use of their voices in the workplace in comparison with observations of teacher vocal practice. The research within takes a focused look at the elementary music classroom, asking:

1. How do elementary music teachers describe their professional vocal practices?

2. What perceptions do elementary music teachers have of their environment including the professional demands placed upon their voices, acceptable levels of vocal health, and the status of their voice as a professional tool?

This chapter will express the research methodology used and includes the following: a review of the study purpose, the rationale for the approaches used, descriptions of the participant samples, an outline of the data collection timeline, data collection approaches, positionality and ethical considerations, exploratory and pilot study information, a plan of analysis, and limitations to the study. The chapter will conclude with a short summary.

Purpose

The purpose of this study is to investigate how elementary music teachers describe the expectations and challenges of voice use in the workplace, to better understand how teachers think about their vocal practices, how teachers understand their
voice as an occupational tool, and to place these observances in context with teachers’ observable vocal behavior. Results of interviews and observation provide first hand experiences, clarifying perspectives and practices as experienced by a population potentially at risk. These results have value in furthering an understanding how teachers feel about their vocal health, how they experience and understand the vocal demands of their teaching positions, and to enrich future communication with teachers about how workplace vocal health can affect the health of their careers.

As professionals who are active in their field, the participants in this study allow a first-hand look at an experience which has not been specifically addressed. Previous studies have investigated health issues and known behaviors, observed behaviors in the classroom setting, have researched backgrounds, and have speculated about beliefs. This study combined these concepts and provided a set of small snapshots which may resemble the experiences of a large population at risk, a limited coordination of concepts which is new to the field.

**Rationale**

The goal of this study was to learn about teachers’ personal experiences, to establish a bridge between studies of what teachers do and what happens to teachers’ voices, and to illuminate teachers’ thoughts and understandings of the use of their voice in the workplace. After all, if a teacher does not realize their voice and vocal health are key aspects of their career, that teacher may not protect their voice, seek help when necessary, or even consider the voice may need protection.

Morrissey (2013) suggested the need for more in-depth information as it relates to a teacher’s personal experiences. Cantor Cutiva et al., (2013) recommended a
combination of objective measurements and self-reports, providing associations with working conditions, and correlations between the objective and the personal (p. 149). Roy and cohorts (2004) suggested a truly representative investigation into the vocal health of a population of teachers would be best served by the administration of questionnaires to teachers within a narrow window of time when all are likely to have the same basic exposure to vocal use and work situations. Bernstorf and Burk (1996) recommended recording and measuring types of activities and teaching environments as well as the number and times during the day in which these took place. Hackworth (2007) suggests a need to for investigation into other categories which affect a music teacher’s environment, including water consumption; vocal warm-up time; talking over singing, recorded music, or instruments while delivering instruction; the use of non-verbal commands, teaching responsibilities, and details of schedules. Combining elements of these proposals would provide needed insight into the vocal demands held within the working conditions of teachers.

**Research Approach**

This is a qualitative multiple case study of ethnographic design and viewed through a constructivist lens. A strength of ethnography is a, “design of inquiry coming from anthropology and sociology in which the researcher studies the shared patterns of behaviors, language, and actions” (Creswell, 2014, p. 14). The data is mainly observational and often collected via interview and observation. Creswell defines qualitative research as, “an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (2014, p. 4).
Creswell (2014) defines the constructivist interpretation as, “individuals develop[ing] subjective meanings of their experiences” (p. 8). Such research takes place in situations which are both numerous and diverse, which leads to a need for research allowing, “the importance of rendering the complexity of a situation” (Creswell, 2014, p. 4). The originating concept behind this case study came from Morrissey’s 2004 single case study of a teacher and the concepts of vocal perception which she described. Such participant perceptions are constructed not only through experiences, but through cultural norms, the contexts in which people live and work, and shaped by their backgrounds. The strength of qualitative data is the emphasis on the personal experience, “that they focus on naturally occurring, ordinary events in natural settings” (Miles, Huberman, & Saldaña, 2014, p. 11). This deep look into personal experience, using the words of the participants, allows researchers to begin to frame how participants relate to and understand their world. An in-depth exploration of the teacher’s personal experiences, understandings, and the actions taken because of these concepts requires a qualitative research design.

Case studies are a comprehensive method (Yin, 2003) and their strengths include the ability to, “explain the presumed causal links in real-life interventions that are too complex for the survey or experimental strategies” and to, “illustrate certain topics” (p. 15). Yin suggests multiple case studies yield an analytical benefit arising from varied situations. If similar results arise from differing conditions, then the generalizability of results may be expanded. Likewise, as much skepticism of the single case study centers around the single and distinctive set of conditions described. If two or more case studies
are placed under analysis, such criticism may be placed to rest as external validity increases (Yin, 2003, pp.53-54).

It is important to note that a weakness of case study design is the concept of generalizability. Strictly speaking, results of case studies cannot be generalizable as the participant population is too small. Kvale stated the same regarding interviews, another aspect of this case study, saying, “Interview findings are not generalizable; there are too few subjects” (2007, p. 87). Yin suggests, however, case studies are, “generalizable to theoretical propositions and not to populations” with a goal of developing theory via description and illustration rather than frequency of replication (2003, p. 10). Bloomburg and Volpe addressed this in a similar way, specifying that the case study objective is not generalizability but, “transferability – how (if at all) and in what ways understanding and knowledge can be applied in similar contexts and settings” (2016, p. 47). Case study design, in the manner described above, focuses upon relevance in broad terms, in illustrative descriptions which apply to similar theoretical circumstances.

**Participants**

A limited number of participants allows for a more careful study of each case and more in depth understanding of how meanings emerge from specific experiences. This case study included three full time, musically trained elementary school music teachers who taught Kinder through 5th-grade general music. Creswell suggests four to five is an ideal group for case study (Creswell, 2004, p. 189). Yin suggests more than two (Yin, 2003, p. 54). I sought five participants. Four potential participants responded, and one backed out of the study citing a concern for the time needed to participate fully. The case study progressed with three participants.
I selected a focus upon elementary music as teachers at this level use their voices to communicate via speech as well as to model, lead, and provide guidance in song. The teachers each taught Kinder through the 5th-grade classes of general music. The selection is not completely homogeneous as the teachers vary on age, gender, years of experience, educational background, and primary instrument of study.

**Gaining Access to Districts**

To identify potential districts for study, I contacted the districts to learn what the requirements were for study requests. Some districts had this information, including needed forms, on their websites. Others did not, and I had to contact the district offices. I began this process in June of 2016. Over the next year and a half, I contacted more than 50 districts in a large city in south central Texas and the surrounding areas. I experienced significant challenge in gaining access to teachers for this study.

The pattern for rejection fell into two groups: submission followed by review and speedy rejection, or submission followed by acceptance followed by withdrawal of permission. As districts and district review boards rejected the study, I asked my points of contact for information as to why the study was rejected that I might correct any issues before submitting the study elsewhere. No districts would provide a response, and some did not respond to this question at all. I began to surmise there might be legal reasons districts would not allow access to the teachers.

After several months of rejections, I began to adjust the study, little by little, to remove topics or concepts which district legal teams might view as being controversial, fallible, or setting of legal precedent, and to reword questions to be more open and less direct. For example, “If you thought your voice was affected by your work environment
or duties, would you speak with your administration about it?” became, “If you thought your voice was affected by your work environment or duties, would you speak with someone about it?” As more districts declined or stopped responding, I removed several questions all together, such as those relating to OSHA and Workman’s Compensation and any linking the field of teaching with any potential impact to vocal health. I removed the recorded voice samples and any mention of collecting artifacts. I was aware of my positionality as supportive of both teachers and districts, and equally aware that districts had no reason view me that way.

After my study had been significantly rewritten, I contacted three districts which had declined earlier versions of my study in hopes to resubmit. Two districts did not return contact. The other refused to view the study again, regardless of the modified design. I did not attempt this second contact with all districts who had previously refused the study, choosing instead to my energy into expanding my boundaries outwards. In the late Spring of 2017, concerned I might not locate a district, I expanded the possible pool of participants to private schools in the city area. I contacted more than 200 campuses and resulted in a potential pool of six participants. One school closed, one participant retired, two schools underwent either a change in administration or a change in management and ceased to return contact, and one teacher was reduced to part-time and rendered ineligible. I opted to refocus my attention to public schools. In August and September of 2017, two districts allowed the research to be proposed to teachers: one north of the city and one within the city. At this point, I sought and was granted Institutional Review Board (IRB) approval through Teachers College of Columbia, New York.
Gaining Access to Teachers

To obtain contact with teachers, I asked the Fine Arts coordinator for the district north of the city to send out a generic notice of an upcoming research project to the elementary school music teachers. This email gave notice of research on the vocal health of teachers and asked for volunteers who were vocally trained and taught full-time at one campus to respond to the district Fine Arts office. The Fine Arts coordinator suggested there were five potential vocally trained participants and one responded.

The Fine Arts coordinator of the district within the city was out on leave when I was given permission for the study and still out on leave when I received IRB approval. The district office contact suggested I research the elementary schools and initiate contact rather than wait for the coordinator to return. The school district within the city is large and resulted in a correspondingly large potential participant list. I searched the list of elementary campuses and made a list of names, addresses, telephone numbers, and grade levels serviced. Some campuses were divided into smaller grade level groupings of K-2 and 3-5. I dropped these campuses from my working list of schools. Some campus websites provided lists of teachers and the subject(s) taught, providing me with possible teacher names. Knowing teachers are often shifted between campuses over the summer, I did not rely upon website accuracy. I called the K-5 campuses, briefly described who I was, asked if the Music teachers were full or part time, then asked for the names and email addresses of the Music teacher(s) of the school. Three campuses did not answer the telephone.

I then sent an email to each teacher working at a kinder through 5th grade campus, regardless of full or part time status. The email gave generic notice of an
upcoming research project to the elementary school music teachers and had been approved as part of the research request. This email was nearly identical to the notice sent by the district north of the city except the teachers were asked to respond directly to me. Two teachers responded.

At this point, the Fine Arts coordinator returned to duty and reached out to me for more information. After sharing my research plan and goals, the coordinator put together an email and sent it out to the teachers with vocal training in their educational background. One teacher from this pool responded. Shortly after initial contact, this final participant withdrew from the study, citing a concern for the time required to participate. Once I had participating districts and four potential public school participants, I decided the inclusion of a private school teacher would vary the scope of experience, training, and workplace demands for the study and I eliminated that participant. Though the process was long and varied, participants from both districts were largely self-selected from a purposefully selected pool. The process of acquiring participants rendered two aspects of my study design void: I was not able to narrow participants to those who had been vocally trained (two of the three had vocal training) and I was not able to specify the teacher work only upon one campus (one filled a position split between two schools).

Once access was granted, scheduling to meet with the three teachers and arranging the day of observation was manageable. Each principal on each campus had to be asked for permission to observe, an added layer of gatekeepers in the process. As each teacher was observed from the beginning of duty to the end of the duty day, I needed access to all areas and situations the teacher would visit. This included before and after
school duties and rehearsals, and the full teaching day including all duties assigned within these hours.

Each of the teachers contacted their own principal for permission to be observed. Once permission was granted, I emailed participants the Informed Consent research description. These were signed, scanned, and returned via email. Immediately upon receiving the signed consent form, the background questionnaire (BQ), VHI, and SVHI were emailed to the participant, and an interview date and time was arranged. Once the BQ, VHI, and SVHI were returned, I asked for potential observation dates. One participant had not yet set an observation date and I asked for potential dates after the conclusion of that Interview.

Data Collection Timeline

One week prior to observation:

- Voice Handicap Index (VHI) - delivered and returned via email (approximately 10-15 minutes).
- Singing Voice Handicap Index (SVHI) - delivered and returned via email (approximately 10-15 minutes).
- Background questionnaire (BQ) - delivered and returned via email (approximately 10-15 minutes).
- Interview – upon completion of the VHI, SVHI, and BQ, completed via telephone, digitally recorded for transcription (approximately 45 minutes to one hour)
Observation day:

- One full workday of observation, field note collection
- Follow up interview – completed via telephone or email (if completed by telephone, digitally recorded for transcription)

**Data Collection Approaches**

This study seeks insight into how teachers negotiate the difficulties or challenges of voice use in the classroom, to better understand how teachers think about and feel about their voices and how they understand their voice as an occupational tool. Results of questionnaires, interviews, and observation provided me with first hand experiences and yielded new insights into describing perspective and experiences for a population at risk. This understanding has value in furthering conversations of how teachers feel about their voices and vocal health, and to enriching thought regarding how these insights interplay with the concepts of teachers and vocal health in the workplace.

This study took place in two parts: email and telephone contact, and then observation. The “before” research was comprised of a background questionnaire (BQ), the Voice Handicap Index (VHI), the Singing Voice Handicap Index (SVHI), and an interview. Two to three weeks later, the teachers were observed for a full workday. The BQ (Appendix D) detailed physical classroom conditions, situational demands, the presence and use of technology, vocal load, fatigue and stress, and diet and health. Topics were taken from risk factors found in the literature (see Table 1), from concepts either personally experienced or related to me (by past student teachers or by mentors working with new teacher protégés), and from Sataloff’s patient history questionnaires (2017c, Appendix 15-A pp. 211-218). The BQ was sent as an email Word document. The second
and third components were self-reporting instruments on the perceptions of vocal health, the VHI and SVHI (Appendix B and C). These instruments respectively addressed the spoken and sung uses of the voice and were also Word documents sent as emails.

The final component of the “before” strand of research was a digitally recorded semi-structured interview (Appendix E). To make as certain as possible all vocabulary and meanings were understood, I gave participants a short glossary of terms to read before the interview (Appendix F), then asked if the participant had any questions. Interview questions are intended to focus on the way people construct and experience the world, not providing one answer (Beer, 1997, as cited in Dilley, 2000). This interview addressed vocal professionalism, vocal dysfunction and effects, the reporting of vocal problems, vocal load awareness, medical concepts, seeking help, and awareness of employee protections. Items on this interview were developed from an amalgamation of the background questionnaire and Sataloff’s patient history questionnaire (2017c), representing topics which invited participant introspection and responses which are richer than a binary “yes” or “no.” Interviews were conducted over the telephone.

The second phase of research comprised of a full participant workday observation. This observation took place two to three weeks after the initial response email. During the observation, attention was paid to behavioral choices and how the teacher’s pattern of occupational voice use varied while the participant was at work. I took field notes of behaviors, choices, activities, and complicating factors. After the observation was concluded, participants were asked if they had anything else they wished to add.
**Data Collection**

Data from this case study was collected from September and October 2017 in a two-part plan. At the end of September, I contacted the participants and send a description of the study and consent forms. I then sent out the BQ, VHI, and SVHI via email. The strength of questionnaires is that participants can complete them in their own time. Also, the researcher is not present. When present, a researcher controls the line of questioning and, to some extent, possible responses. Without a researcher, participants can provide information without a filter. There is, however, a potential for self-reporting bias. Another source of bias is the wording on the questionnaires, which may restrict the participant’s responses, or may direct thoughts due to question order.

In early October, I interviewed the participants. All three participants preferred a telephone interview. The interview was digitally recorded for review during coding and for the generation of a word-for-word transcript. I transcribed the interviews by hand and I returned to the recording to compare the transcript and verify its accuracy. The transcripts were also member checked for accuracy.

The interview was intended to complete information which the BQ, VHI, and SVHI did not cover. More, the interview would allow for a richer probing into the participant’s opinions, thought processes, perspectives, thoughts, and states of mind, information which is not possible to collect in questionnaires. In an interview, participants can provide more personal information and insights. The presence of the researcher allows for a controlled line of questioning, to probe for more details. Weakness for interviews are that indirect information are sifted by the participants and are translated through their thoughts and interpretations. The data is based upon
subjective memories. The researcher’s presence may cause biased responses, and not all participants are able to construct and deliver responses quickly.

The second part of data collection commenced in October and November, when I visited each participating teacher and observed a full workday. The advantage of observation is first hand experience, recording information as it happens including unique or unusual occurrences. The disadvantage is much as with an interview: the presence of the researcher may change the situation the researcher is there to witness. Also, a researcher could miss many events, some of which will be important, and is physically incapable of recording everything witnessed.

Other variables of the research are participant’s age and experience level, both teaching and performing, basic biological factors which may make the voice resilient or weakened, the ways the voices are used on the particular day of observation (i.e., was there a field day the day before, or does the teacher have a non-work related performance scheduled within the next few days), professional demands which are not accounted for in research design (single or double classes, a forgotten assembly which cancels music class, or the nature of extra duties which provide an extra degree of risk such as inhaled automotive fumes during parking lot duty). The largest weakness of observation rests with the researcher as all that is recorded is subjective.

The VHI and SVHI

The VHI (Jacobson et al., 1997) was designed to provide a robust instrument which could be used to discover social, emotional, and functional effects of voice disorders and the impact of these upon individuals’ lives. The SVHI (Cohen et al., 2007) was created to
provide an instrument for a unique population which was also sensitive enough to reflect the changes singers perceive.

The VHI and SVHI were both designed for use with individuals who have already sought help for vocal illness or injury. Before teachers seek medical support, they must first acknowledge their voice is compromised or a state of injury or illness is present. Research suggests few teachers seek help when they experience the symptoms of vocal disorder (Assuncão et al., 2012) and many teachers may not view signs of poor vocal health as an issue (Lyberg-Åhlander et al., 2015, p. 15). Herein rests a challenge in using the VHI or the SVHI: if the concept of handicap or ownership of the injury is in the title or wording, participants may not respond openly to the questions because they do not feel they are experiencing injury, much less a “problem” or a “handicap.”

Stigma may also be at play here. Individuals may avoid seeking treatment when accepting the service may result in being classified or characterized (Paolillo, Oliveira, & Behlau, 2013). This avoidance of social consequence, and possibly of treatment, is called “label avoidance” (Corrigan, 2014). If the concept of handicap or ownership of the injury is in the title or wording, participants may not respond openly to the questions because they do not want to admit they could have an injury, much less a “problem” or a “handicap.” If a teacher’s job requires singing, a teacher who reported a significant degree of “voice problems” may feel they were reporting an inability to perform their work.

1 The SVHI is not useful for singers who do not identify themselves as experiencing illness or injury. Since the time of this study, I have learned of another scale: the Evaluation of the Ability to Sing Easily, or “EASE,” which was designed to illustrate perceptions of current singing voice status for professional music theatre singers (Phyland et al., 2015). Though this is still aimed at a performance populace, results may be more relevant with this tool.
Positionality

I approached this study as an interested and credible insider. I have 24 years of service in education, seventeen years of experience teaching music in public schools, and fifteen at the elementary level. I am vocally trained which, in this research, represents an important aspect of educational background. My professional experience may result in bias and likely to evidence in how I view and report the participants’ experiences. Maxwell suggests the goal in qualitative study is not to eliminate the influence of the researcher, but to try to understand and use that influence productively (2008, p. 243). As a participant observer, my experience may have compromised my ability to remain impartial but could also be an advantage as I was able to notice patterns of vocal use based upon first-hand experience.

During this research, I intended to be a participant observer. When asked questions by students as I was introduced to a group at Gardendale, I found myself addressing the combined classes in the gym. Thus, I became an observing participant. This momentarily compromised my ability to observe and make jottings but also worked to my advantage as personal experience allowed me to notice my own patterns of voice use.

Ethical Responsibility

Completion of this research was reviewed and authorized by both the Institutional Review Board of Teachers College of Columbia and the Research Boards of the participating Texas school districts. I did not foresee any risks other than what teachers encounter day to day as part of their work or any other legal barriers or considerations for
this study. Both the Singing Voice Handicap Index as well as the Voice Handicap Index were used with permission.

The consent form and notice of participant rights detailed no direct benefits or payment for participation in the study and no anticipated risks beyond those encountered in day to day life. The participation was voluntary and confidential, all names were changed, including the name and location of the participating school districts. Likewise, all records and audio-recordings were kept private and in a confidential file. The districts have no direct benefit for allowing the research to take place. Both districts requested a report of the study findings. There was a possibility of increased awareness of vocal practices on the teachers’ part and increased diligence to protect the voice as an occupational tool.

Prior studies have speculated some teachers may not report vocal health issues as they fear it may reflect poorly upon them and / or their ability to teach. To counter the challenge of situational bias, I asked participants for permission to visit with them in a quiet, off-campus location of their choice or to telephone them at a time convenient for the participants. All three teachers provided times outside of the school day and requested telephone interviews.

Participants were made aware the results of the study would be used for dissertation purposes and might be used in future presentations and publications. The consent form provided teachers with the choice to opt either in or out of participation for audio recording, and to either allow or deny the use of materials specific to their participation to be viewed in an educational setting outside the research. Specifically, the latter was about any future study of this topic which may be undertaken by the researcher.
Exploratory and Pilot Studies

In June of 2015, an exploratory study was completed and the research design largely worked. I had created an 84 item list of questions which I split into the background questionnaire and the interview. Several items on the interview could be removed due to repetition and two of the questions required refinement. For outsider verification, asked another two teachers my adjusted interview questions. Both teachers’ responses affirmed the refined questions were more narrowly focused upon the purpose of understanding teacher descriptions of voice use in the workplace.

I also refined two of the statements on the quality of life survey I had intended to use for the study. This was a combination of the SVHI and VHI, a document I called the Music Teacher Voice Index (MTVI). As elementary music teachers are expected to utilize both spoken and sung voices with professional rigor, I adapted the two indices into one 60 question instrument. Also, several statements on the SVHI and VHI duplicate each other. Removing these duplications yielded a benefit of reduced responses required by participants. The MTVI, reflecting both spoken and sung voicing, provided an insight into teachers’ perceptions of both voice uses.

Research suggested teachers who report themselves as vocally healthy may either not view potential symptoms as an issue or may be unaware of a deficiency (Lyberg-Åhlander et al., 2015). As such, I also wished to remove all references to “handicap” and ownership of vocal problems (“my voice problems,” etc.), as did Vincent with the VHI in 2007. For the purposes of this study, I sought outsider validation from a speech pathologist, a voice teacher, a university professor who works with pre-service teachers, a singing voice specialist, and an author of the VHI and SVHI. Each spoke to the potential
efficacy of the document. Post pilot study and prior to dissertation study, I sought copyright permission for this adjustment and combination of documents. The publishers of the SVHI allowed this modification. The publishers of the VHI did not. For the dissertation, I used the VHI and SVHI in their original forms.

In April of 2016, I completed a pilot study of this methodology. The rationale was to verify the instrumentation and sequence of this study, and to assure the data collected would connect with and answer the research questions and address the concepts of the study, contributing to the answers this study provided. The second goal was to provide one more testing of the questions, their sequence, and the responses provided.

One vocally trained music teacher working full time at one campus and teaching Kinder through fifth grade agreed to complete the research process. The campus was in a suburban neighborhood in the city, in a different school district than either the exploratory or dissertation studies. The background questionnaire and MTVI were sent and returned via email as Word documents. The teacher validated each instrument took 20 minutes or less to complete. The interview was completed in person but, for the teacher’s conveniences, on the teacher’s campus, which may have resulted in situational bias.

**Plan of Analysis**

I completed data analysis through the lens of the constructivist paradigm. I sought to look for shared constructs and meanings which reflect the social and cultural characteristics of the teachers who live them. To do this, I compared questionnaires, observations, and interviews, beginning with the first data collected. In qualitative research, there is a “reciprocal relationship between analysis and data” (Lather, 1986, as
cited in Creswell, 2004, p. 67). In Figure 2, the research instrument distribution charts the relationships between the research questions and each different item for data collection. Data analysis takes place simultaneously with data collection – a recursive and interactive process of inductive reasoning. Qualitative research is based upon the concept of context. Participants exist within the realities of their experience, realities which shape their choices and behaviors. A researcher’s job is to act as the “primary instrument for data collection and data analysis,” (Bloomburg & Volpe, 2016, p. 41).

Prior to research, I created a strategy time line within a database, containing contact and implementation dates and records, due dates and received/completed dates, notes upon early coding, and physical and electronic file locations for instruments and data. Data condensation is a constant part of the project process, a process that includes analysis (Miles et al., 2014, p. 12). Kvale outlined several steps of analysis which take place during the interview process itself: (1) participants describe their personal experiences thoughts, (2) participants may have spontaneous moments of insight in which they establish new meanings, (3) the interviewer condenses and interprets, then relays their understanding back to the participant. This “in the moment” member checking provides one of the strengths of interviews (Kvale, 2007, box 9.1, p. 102).

During data collection, possible codes were noted upon three by five cards and reviewed as part of the iterative process in what Creswell called, “naturalistic generalizations” (2014, p. 66), the interpretation of themes to which the researcher adds his “own personal experiences.” Once each stage of data collection was complete, coordination of the data began, viewing various sources and searching for common themes. Cross-case comparison between various data sources brings rich information as
items corroborate or conflict with participant responses and/or actions. As interviews were transcribed and validated by member checking, I marked codes within the margins of the transcripts. Kvale called this interview analysis, “meaning coding” (2007, p. 104), a means of making known what may be interpreted from the texts.

After reading all codes, I repeated this process several times more, looking for commonalities while also increasing consistency of codings using recursive analysis. I then wrote out the codes on paper, grouped them, and sorted them. I revisited my original list of risks for teacher vocal dysfunction and compared the lists. Creswell suggests building from data to broad themes, then using participants’ words and meanings in deductive work (2014, p. 65), carefully viewing the data while, “looking for evidence which may support the themes or point to areas which may require further research” (p. 186).

Common themes arose from the data in a process called “winnowing,” focusing upon some aspect of data and disregarding others (Creswell, 2014). The act of selection brought Maxwell’s suggestion (2008) to not to eliminate researcher influence, but instead to use that influence productively and with understanding (p. 243). I returned to the electronic files of the observation field notes and completed the same process, making etic memos and continuing to utilize inductive analysis to generate codes. The collecting of information from multiple sources, multiple participants, and using a variety of methods as part of the case study reduced the risk of forced associations and systemic biases (Maxwell, 2008), and strengthened the validity of any relationship between teachers’ thoughts, beliefs, and actions regarding occupational vocal health.
Table 2

Research Instrument Distribution

<table>
<thead>
<tr>
<th>How do elementary music teachers describe their professional vocal practices?</th>
<th>What perceptions do elementary music teachers have of their environment including the professional demands upon their voices?</th>
<th>What perceptions do elementary music teachers have of their environment including acceptable levels of vocal health?</th>
<th>What perceptions do elementary music teachers have of their environment including the status of their voice as a professional tool?</th>
</tr>
</thead>
<tbody>
<tr>
<td>BQ: 13 a-e</td>
<td>BQ: 1 a-m</td>
<td>INT: 4,5,6 Vocal professional</td>
<td>I: 2,7,8,9 Vocal professional</td>
</tr>
<tr>
<td>Vocal load</td>
<td>Classroom conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BQ: 14 a-d</td>
<td>BQ: 3-12 Situational demands</td>
<td>INT: 25 Reporting</td>
<td>I: 23,24 Reporting</td>
</tr>
<tr>
<td>Diet and health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VHI &amp; SVHI</td>
<td>INT: 22 Reporting</td>
<td>I: 30,31 Seeking help</td>
<td>I: 26,27,28 Doctors, Health</td>
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<td>INT: 1,3</td>
<td>INT: 10, 11 Vocal load</td>
<td>VHI</td>
<td>I:18,19,20,21 Vocal dysfunction &amp; effects</td>
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<td>Vocal professional</td>
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<td>INT: 12,15,16 Vocal dysfunction and effects</td>
<td>SVHI</td>
<td>BQ: 2 Situational demands</td>
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<td></td>
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<td>OB</td>
<td>INT: 32 Seeking help</td>
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<td>INT: 33, 34 Employee protection</td>
<td>BQ: “Anything else?”</td>
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<td>BQ &amp; INT</td>
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<td>OB</td>
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<td>“Anything else?”</td>
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<td>OB</td>
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*Note. BQ = Background Questionnaire; INT = Interview; VHI = Voice Handicap Index; SVHI = Singing Voice Handicap Index; OB = Observation*
Developers of the SVHI interpreted scores by generated raw score averages. A higher numerical score represented a higher perception of handicap. Raw scores were scaled from 0 to 100 by dividing by 144 to generate the final SVHI score. The ten-point visual analog scale (VAS) following the SVHI was grouped by percentiles into three severity categories: 0 – 25%, 25-75%, and 75-100% (Cohen et al., 2007).

The speech and language pathology toolkit (International Parkinson, 2014, p. 8) suggests a normal mean of 8.75 and a standard deviation of 14.97 for the VHI as observed from normal adult scores. Calculating a z-score from the participants total score allows interpretation of the score (Table 3).

Table 3

<table>
<thead>
<tr>
<th>Score</th>
<th>Impact</th>
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<tr>
<td>Negative scores</td>
<td>Within normal limits: no perception of handicap</td>
</tr>
<tr>
<td>0 to +1.00</td>
<td>No significant impact on aspects of daily life</td>
</tr>
<tr>
<td>+1.01 to +1.99</td>
<td>Mild significant impact on aspects of daily life</td>
</tr>
<tr>
<td>+2.00 to +2.99</td>
<td>Moderately significant impact on aspects of daily life</td>
</tr>
<tr>
<td>+3.00 or more</td>
<td>Severely significant impact on aspects of daily life</td>
</tr>
</tbody>
</table>

Due to the large changes in questions and topics needed to get my study approved by school districts, there is a large discrepancy between the data I was able to collect during my preliminary and pilot studies and in my dissertation study. Several concepts I had hoped to support with data in this study were not possible to directly address and

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2 Z-score = (participant total score) – 8.75 / 14.97
others could not be addressed at all. This will be discussed in more detail in further chapters.

**Label Avoidance**

A new limitation arose during this study: label avoidance, a phenomenon in which individuals circumvent classifications or categorizations due to stigma associated with a term (Corrigan, 2014, p. 4). Participant responses to the VHI, SVHI, and then to the following interview, may have been compromised by inclusion of the term “handicap” and other language which communicated ownership of vocal problems. If the participants do not recognize their experiences as being a vocal illness or injury, and if they do not identify as vocally handicapped, they might adjust their responses accordingly. The potentiality of this circumstance was validated mid-study. After completing the VHI and SVHI, two participants independently reached out, concerned that they might not be eligible for study participation due to their good vocal health.

Though there was no means of circumventing label avoidance, I consistently spoke with the teachers of vocal health and affirmed the study was focused upon a normal day of work and whatever that might include. In this way, it was my hope that findings would be transferable to other teachers, other vocal professionals, and other, similar, workplace contexts.

**Summary**

In conclusion, this chapter provided a review of this multiple-case study methodology. Qualitative research was selected to demonstrate the epistemology of elementary music teachers’ descriptions regarding use of their voices within the
workplace, illustrating thoughts and understandings of professional demands, personal practices, acceptable levels of vocal health, and how their voice might serve as a professional tool. The participant sample was comprised of three elementary music teachers from a large city in central Texas and its surrounding area. Data collection consisted of a background questionnaire, the Voice Handicap Index, the Singing Voice Handicap Index, individual interviews, a full day of observation, and follow up questions. The data were analyzed and coded, yielding emergent themes and was then related to literature of the field. The intent of this study was to gain insight into how teachers describe the expectations and challenges of voice use in the workplace and to better understand how teachers think about their vocal practices.

Chapter 4 will render findings for this study, offering rich descriptions in teachers’ own words, Chapter 5 will provide analysis and interpretation of these findings in context of literature in the field, and Chapter 6 will draw conclusions and make recommendations both for further study and actions within the field of elementary music education and other disciplines.
Chapter IV
PRELIMINARY FINDINGS

Introduction

The purpose of this multiple case study was to probe the perceptions of vocal health held by elementary music teachers and to observe teachers’ vocal use during their work. As elementary music teachers regularly use both speech and song in their classrooms, insight is needed into how music teachers think of their voices, what personal and professional value teachers place upon their voices, and how vocal health effects, supports, or detracts from their career in the classroom. A better understanding of the intersection of teachers’ perceptions of vocal health and workplace demands as described by teachers may allow teacher preparation programs, school districts, and other educational stakeholders to better help teachers prepare for and preserve their careers.

In this chapter, the central findings acquired from three interviews (INT), three full workdays of participant observation (OB), and three collected sets of questionnaires (Voice Handicap Index / VHI, Singing Voice Handicap Index / SVHI, and Background Questionnaires / BQ) will be presented. The principal findings surfaced from this study are staged in relevance to the research questions:

1. How do elementary music teachers describe their occupational vocal practices?
2. What perceptions do elementary music teachers have of their environment, including the:
   a. professional demands placed upon their voices,
   b. acceptable levels of vocal health, and
   c. the status of their voice as a professional tool?
Following is a profile of each observation setting, a vignette from each case study, and preliminary findings based upon observation and participant responses. Quotes are taken from word-for-word interview transcriptions or comments made during observation. These are intended to represent the complexity of the situation under review. Descriptions of environment are taken from observation and the BQ. Data from the VHI and SVHI are used to support and corroborate the findings. The resulting coordination of these data sources yields a story of each teacher and their thoughts regarding teacher voice.

**Case Study: Cougar Elementary**¹

Cougar Elementary is a welcoming, ranch style elementary school of red brick featuring a broad, covered front porch and multiple trees in the parking lot. From a smaller school district north east of the city, the campus facilitates families in a semi-rural area. The area around the school has a small-town feel. The school is built with an interior courtyard and each wing off the original T of the building is consecutively newer. The campus has 432 students in grades Kinder through fifth grade and 86% of the students served are economically disadvantaged. The student ethnicity groupings are 78% Hispanic, 13% white, and 8% African American.

Cougar Elementary has 27 full time teachers, and an average student to teacher ratio of 15-1. The school has three Special Education teachers and six instructional aides. At the time of the study, five of the staff had over 20 years of experience and two teachers were beginners with less than a year of experience. The average years of teacher

¹ All campuses, districts, and participants are referred to by pseudonym.
experience were 11 years. Female teachers outnumbered the males, 24 to three. The campus had two administrators and the principal was female.

**Cougar’s Music Room**

The Music classroom was a wide space which used to be the school library. The room was square with acoustic tiles for the ceiling and wide fluorescent light boxes. The room’s high and thin windows were set on either side, one strip of windows along the top of each wall, and large shelving units covered three walls from floor to windows. The shelves held books, papers, instruments, and manipulatives. The tops of the shelving units provided storage for larger instruments which did not fit below. The far exterior wall contained a doubled layer of wipe boards on tracks with a clock above. To the right and left were a few smaller shelves, and an upright piano took up the far left corner of the room, sounding board to the wall. Motivational posters took up wall space above the piano. A word wall of music terms faced the door.

The floor was laminate tile and sported a large, colorful carpet in the center of the open space. The carpet could be used for a music staff or a graph, featuring five horizontal stripes (red, orange, green, blue, and purple). The carpet was divided vertically by six dark blue lines (the same color of the carpet binding), yielding thirty squares, enough space to accommodate assigned seats for most single classes. Between the board and the carpet was a thick ergonomic footpad.

The teacher’s desk stood in the back of the room, facing the class space and wipe boards. There was a ceiling mounted projector facing the wipe board and a set of small speakers on the teacher’s desk. The desk was closed off by short shelving, all turned to face the interior of a non-traditional “office” space. The shelves were full of books, stacks
of papers, records, compact discs, and other resource materials. At a 90 degree angle to the left of the teacher’s desk was a small, two-level computer desk with a desktop computer. The fan on the computer made a constant, quiet, low pitched hum. Behind the desk, against the fourth wall, was a workspace table and a chair for the student teacher. Behind the computer desk was an area cordoned off by larger bookshelves. This space was filled with books, instruments, and numerous closed, stacked boxes.

The hall outside Cougar’s Music room was dominated by a locked set of security doors. To the left, at the end of the outer classroom wall, stood a chain link fence with a locked, swinging gate. Located on the exterior of the door, the staff touched ID badges to access control plates, unlocking the door. A staff bathroom and custodial area also occupied this space, along with a hallway leading to several classrooms of the school. The security door exited to a covered walkway which lead to the central courtyard and the original building of the school, containing the cafeteria, employee lounge, main office, gymnasium, and other classrooms.

As the room was originally a library, the placement at one end of the campus allows for quiet and, apart from the security door, few hallway interruptions. The carpet on the Music room floor, acoustic ceiling tiles, and multiple bookshelves reduced the noise of the room, which suited the original use of the space. The desktop speakers provided more volume than intelligible sound and were not acoustically matched well to the needs of the room. The space was not designed for music, however, and the lack of reverb dulled instrument playing, singing, and listening to recorded media. The position of the security door immediately outside the music room generated noise from classes entering and exiting the building. Additionally, each time a student crossed from the main
building to this wing of the campus, the office telephoned the Music room, requesting the door be opened, and the teacher had to step out of the space to open the door.

**Samuel Larken**

Cougar’s Music teacher, Samuel Larken, began his career teaching Band. He had taught for 25 years, ranging from PreK to the University Level, and held a Bachelor of Music – Music Education. His primary instrument was tuba and his secondary was voice. He held a Masters in Music – Music Education with Kodály specialization and Level III trainings in both Orff and Kodály.

Larken, married with a daughter in the 11th grade, was a laid-back gentleman: soft spoken, calm, and thoughtful. When I arrived for my observation, he described a tradition on his campus in which the teachers chip in and periodically have a catered lunch. Larken mentioned, “someone” had put in a bit of extra money and my lunch was taken care of for the day. As I observed Larken, I noticed this sense of generosity was woven throughout his professional practice, visible in how he used his time and interacted with his students and extended to his entire school community.

Larken was the only music teacher on his campus, self-described as the, “King of my Empire (such as it is) most days!” His class schedule was full with a few open spaces in his schedule, spaces he was permitted to retain and during which he was not required to provide coverage or work elsewhere on campus. This allowed him to focus upon teaching music and providing opportunities for the students of the school. Larken saw 12 different classes daily (six grades levels, two classes per grade level, for 25 minutes each) in addition to his extracurricular groupings which each met once a week for an hour after

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2 All campuses, districts, and participants are referred to by pseudonym.
school. On days when Larken did not have an extracurricular group after school, he provided supervision for student dismissal. Before school, Larken has morning crossing duty, assisting students to safely cross the street to the school.

Cougar had one after-school ensemble, a percussion group of 18 students, which met for an hour after school every Tuesday for the duration of the school year. During the Fall semester, Larken also worked with two teams of fourth- and fifth-grade students, 20 – 25 children each, for the Music Memory competition. These groups met for an hour after school on Monday and Thursday. The faculty meeting was traditionally held after school on Wednesdays.

Cougar’s Music classes met in a five day rotation, two classes per grade level per day for 25 minutes, and he walked to exchange each grade level with PE. His class schedule is worked into a daily rotation with PE and computer skills and is consistent week to week. Before his lunch, Larken took his class to the cafeteria, freeing the grade level teacher from returning from conference to escort the class and leave again for lunch. Larken teaches every student in Cougar Elementary and they pass through his room twice to three times a week, depending upon the schedule, in 25-minute rotations. This totals to 60 classes a week and, at 16 to 25 students per class, results in an average of 992 students rotating weekly through his room. While the average class size is 15 for grade level teachers, classes are divided for Specials, meaning a class may be split into two or three groups and added into other classes, adding six to eight students to the numbers. In some cases, Larken saw a class in combination with an ESL or Bilingual grouping of students. These combined classes may or may not be the same grade level. Students with special needs are mainstreamed on this campus and attend music with their classes.
Twice a week, during both Fall and Spring semesters, Larken traveled after school to the nearby university where he taught in the evenings: private tuba lessons, an instrumental lab experience, and a music course for elementary teachers (future Music teachers in the Fall, future general education in the Spring). He also partnered with one student teacher from the university each semester. During my observation, Larken was hosting a male student teacher who was two weeks into his placement.

Larken was involved in multiple campus activities and volunteered his time when these activities took place outside of the school day. The weekend after my observation, the school participated in a community fitness run. Larken taught all the Cougar students a dance and attended the event to perform the dance with the students prior to the run. The school also has a tradition of taking the fifth graders on an overnight camping trip. The students expect Larken to attend this trip each year, looking forward to their turn for additional time with him and the other grade level teachers. In fact, both Larken and his student teacher attended the camping trip this year.

The day before my observation, Larken spent the day teaching Music on a normal schedule, including Music Memory after school and Tuba instruction at the university. Regarding the Music Memory group, “It was fun but challenging,” he said, “because it filled the gap [of time] between my elementary teaching and my [university] teaching.” When I contacted Larken in January, he noted the difference in his schedule without Music Memory. “I am TOTALLY noticing and LOVING the difference in my Spring schedule without Monday and Thursday afternoon commitments!” The percussion ensemble still met every Tuesday.
The Day Begins

I arrived at Cougar Elementary right at the beginning of the school day. After signing in at the main office, I was given directions to the Music room, located in the adjacent building. I knocked on the security door and Larken stepped into the hall to allow me in. It was his conference period and he was talking with his student teacher, Mr. Moore. The room was already prepared for class with timbales and six tubanos set on the floor and a poem\(^3\) projected on a cleared section of the wipe board. The room was text rich, including a word wall of music terms, and the space was dim as all the lights were off. The only light was from the narrow windows at the top of the room and the door opened to the hall.

I noticed Larken’s voice was recognizable as being the carefully well-modulated level he had used each time we spoke on the telephone. Moore also used a relaxed tone, pitch, and intensity, and the two stood near the door of the classroom, leaning on the half-wall of shelves at the teacher’s desk. They discussed taking fifth grade on the upcoming HEB Camp field trip, how there was no money for a substitute and the administration has okayed adding the Music classes to PE. Larken turned to me and jokingly said, “You should be observing them!” He pointed out the class numbers to the student teacher: 12 – 16 in each music and technology class, but PE doubles the classes. Kinder was pretty big this year, 20 in each class, and you add 5 to 6 more from the bilingual classes, then double it. With the Music class added in, there would be potentially 75 Kinder children in the gym.

The discussion shifted to calls from the office and the locked security doors, of how the teacher must step out of the classroom to open the door. As the Music room is

\(^3\) *Drum Dream Girl* by Margarita Engle
closest to the security door, this has become a responsibility for Larken and his student teachers. This duty creates a necessity to divide attention, to monitor the class while also remaining alert to whatever is on the other side of the security glass prior to opening the security door.

Moore related an encounter during dismissal the day before. A student was deliberately rude and, as he described it, actively attempting to provoke an argument with him in the parking lot. Moore sounded concerned, describing the quick escalation of the event and how he, “had to go get assistance with that one,” seeking an experienced teacher to step in. Larken reassured him,

Discipline and classroom management has to be learned on the job. There is a difference between the classroom discipline in Music versus the general population. Music students usually love the subject. That preempts many issues. (Observation)

As the conference period ended, Moore reminded Larken of a student teaching requirement. He had to design and build a bulletin board and Larken asked him to describe what he had in mind. The two made a timeline for the board construction and reviewed what Moore would cover in class. Realizing his student teacher would instruct part of the day, Larken turned, asking if it was okay for me to observe his student teacher in addition to his teaching. I assured him having a student teacher was a normal experience in the profession of teaching. He assured me Moore would only teach the first components of each class.

As we waited for the first class to arrive, Larken went to the front of the room to quickly review class plans and the student name list for the arriving group. Moore sat in his spot next to the teacher’s desk and inquired about my study. He expressed interest in the topic of the vocal health of teachers and asked to hear some of the interview questions
I had asked Larken. I asked him for verbal permission to use his responses. He agreed, joking, “You’re getting a ‘two for one’ at Cougar, aren’t you?” I notified him all names would be pseudonyms and asked if his supervisor would be okay with his participation. Moore gave me permission to use his responses and, as his supervisor was coming to observe him that afternoon, “We’ll double check,” he said, “but I’m sure it’s fine.”

Knowing the class would arrive soon, I quickly asked background information. Moore informed me he was earning an All Level Instrumental certification in Music Education and hoped to find a middle or high school band position. His only vocal experience was in Vocal Methods class, a one-credit course in which he learned a song but was not taught vocal physiology or, in his words, “how to sing.” After thinking a moment, Moore related students were told in Elementary Methods to use “head voice” when working with young children.

I asked him what “head voice” was. Moore thought a moment, then demonstrated in a sing-song falsetto, “Like this… This is ‘head voice.’” I asked if he had been taught how to use his voice when teaching, and he said, “Only to use head voice, and I don’t know about that but I’m getting better at it… Two weeks ago? Woah!” He laughed and shook his head at his vocal challenge, sipping his plastic tumbler of iced tea. “Why head voice?” I asked. He pondered briefly. “Because it’s closest to the kids’ voices,” he said, which I took to mean a similarity in pitch. Larken walked to the classroom door, ready for the oncoming class.

I asked Moore if he had been taught what to do if something went wrong with his voice, and he answered, “No.” I asked if a noisy environment could lead to an instinctive

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4 Moore’s university supervisor informed him, as the district had granted approval for the study, he did not need university permission to answer questions or be observed for this study.
increase in vocal intensity or volume. “I suppose it could be true,” he said. I asked if guidelines existed to protect teachers from the effects of noise and he laughed, “No,” then had a second thought, asking, “Are there?” When I asked if he prepared his voice for teaching each day, he chuckled, “No.” Again, he fell into thought. At this point, the first class arrived, and he stood, thoughtful, saying, “Should I?” I asked if he prepared his band instrument prior to playing. “Yeah, I do,” he said. “Then why not your voice?” I asked. “I don’t know,” he said. “I’ve never thought about it.” Then he turned, smiling, to meet the students.

**Observations of Voice Use**

During observation, Moore spoke much more frequently than did Larken. For example: when 2nd-grade students made an error in rhythmic reading, Moore chanted to the steady beat: “This-one-is-go-ing-to-sound-a-little-diff-rent-so-re-peat-after-me-oh-kay-” and read the rhythm for the group to echo. Later, during the second 4th-grade class, the students bypassed a rest in rhythmic reading. Moore waved his hand, stopping the class. “There’s going to be silence in this beat. We aren’t going to say anything because there is silence. Let me show you, okay? Ready? Okay. ‘Ta (rest) ti-ti ta.’ Let’s do this together. Excellent. Okay? Go.” The class correctly read the pattern and progressed to the next card. In both moments, Moore used numerous words to describe a concept which could be communicated easily in few words, demonstration, or a gesture.

Moore’s dependence upon vocalizing showed up during melodic reading as well. At one point, a class errored, and Moore’s facial expression conveyed he had heard the mistake but, mentally dealing with the load of teaching, was unsure of what the mistake was. (The card read: “sol-fa mi-re do-do do.” The class sang: “sol-la sol-fa mi-re do.”)
Moore interjected, “One-more-time-” and the class re-read the card and made the same mistake. Larken stopped the class with a raised hand signal to Moore. He gently increased his intensity to be heard from the back of the room, saying, “It can be helpful to… What do you hear happening?” Moore thought, then sang, “Sol-LA…” and resumed teaching, correcting the fa / la error with the class. He did not address mi-re do / do-do do error, but the class, perhaps dislodged from a kinesthetically learned melody, corrected this on their own. Moore, however, sang the rest of the reading patterns along with the class.

When teaching, Moore generally increased the intensity of his speaking voice. When demonstrating in song or singing along with the students, Moore used falsetto. His singing voice sounded different than when he sang in “head voice” (falsetto) for me before the first class. The “head voice” he demonstrated for me was light and slightly aspirate. The falsetto used with the students was brighter, through a more horizontally narrowed mouth, and sounded tight.

As the day progressed, the tightness of Moore’s falsetto began to ease slightly due to his vocal activity. Nine of the twelve times Moore released control of the class to Larken, he absently touched his throat, running his fingertips along his Adam’s apple (larynx) as he seated himself. I did not ask him about this gesture as it seemed unconscious. Later, Moore described his voice at the end of a work weeks as, “Tired. By the second week at the middle school, I lost my voice. Gone,” he laughed. “It came back over the weekend and got better after that.”

After lunch, Moore questioned Larken regarding the difference between his “more comfortable speaking voice” and his “singing voice,” which he described as
“softer” and “weaker.” I wondered if he was feeling the difference between the
developed musculature he habitually used when speaking and a possible lack of
endurance or muscular development for the sustained physical activity of song,
something he would not have experienced often, if at all, when student teaching middle
school band. Larken responded, “Yes [your singing voice is softer] but you’re naturally
soft spoken anyway.” He did not address the difference in range between children’s
voices and those of an adult male or the change in requirement Moore was experiencing
as he navigated elementary education, including a much-increased demand of singing
voice use. I later asked Moore if he had sung in the classroom while student teaching
middle school band. He thought for a moment. “A melody, or a rhythm,” he said. “Not
like this.”

**Descriptions of Professional Voice Use**

Larken cited between six to six and a half vocally active hours each day, though
he did not consider his work in the classroom to impact his vocal health. On the BQ,
however, Larken reported experiencing vocal fatigue over multiple days and into the
weekend while also commenting he “never had a worse voice in the evening.” He
described multiple times when he was not careful to use his voice safely during duty, in
the classroom, or during extracurricular rehearsals. In the interview, however, he said,
“I’m not just, although perhaps from the outside it looks like it, but I’m not just banging
through the day. I’m thinking about how I use my voice and how my students use their
voices.”

Larken’s use of voice in the classroom was as modulated and carefully tended as
the voice he used over the telephone. He used sign language for please, line, go, walk,
stand, and sit, and filled gaps of time between concluding the lesson and lining up for the
teacher softly playing the harmonica or improvising on the piano. He carefully used head
voice and falsetto when singing for the class, and he judiciously rationed his speaking
voice. Larken’s tools seemed to be constant attention, direct eye-contact, sound effects
(“Shhhhhhhhhhh! Bubbles in mouths, please!”), smiles and waves and little speech.
Occasionally, he did speak over the instruments during playing in the room, usually with
a single word and a gesture to indicate what he wanted.

Larken addressed student vocal practice during observation. In both fourth and
fifth grade, Larken specifically addressed balance with the classes who drove themselves
out of tune by moving from head voice singing to belting to shouting. He identified
blending with the softer singing voices instead of dominating them, listening and using
teamwork, and cautioned the students against competitive volume, trying to, “beat” each
other with loudness, and the, “big, talking voice.”

**Vocal Professionals**

“Primarily, I guess,” Larken said, “the definition of ‘professional’ is you get paid
to do that particular thing, so I get paid to use my voice day in and day out. I also try to, I
think about what I’m doing with my voice.” I observed Larken make these choices
during 1st grade. The class was practicing repetitive singing with “There Was an Old
Lady Who Swallowed A Fly.” Larken sat on the piano bench and used stuffed doll
figures and a puppet to act out the story and, as he sang, he carefully employed chest
resonance for most of the song and falsetto for the old lady’s voice. The entire song was
at a slightly increased intensity than the voicing he commonly chose to use. At one point,
a student, excited by the story, became noisy. Larken paused, silently watching the student, who quickly realized he was observed and stopped talking.

Larken described his voice as a tool of teaching. “It’s the way I help my students understand… how I explain things. It’s how I sing and demonstrate concepts.” When Larken chose to sing with the classes, he established pitch, tonality, and lyrics before dropping out, challenging the students to develop and practice independence. He quickly addressed the concepts at hand – mistakes, lack of confidence, memory gaps, and other teachable moments, inserting words or pitches in support, and always dropping back. Regarding care for his voice, Larken seemed thoughtful but largely unconcerned. “You know,” he said, “I don’t do a whole lot [to prepare my voice before teaching]. I probably should do more.” He went on to say, “It’s just kind of catch as catch can, kind of happenstance. Either I do it [warm up] or I just don’t really think about it.”

Larken was demonstrably aware of his voice use, careful to modulate his voice use and maintain what he described as a, “fairly quiet spoken voice.” When leading a class in pairing an ostinato with a melody, Larken sang the pattern twice with the ostinato group, then lead with Curwen hand signs and sang the first few words to establish the melody group. As soon as the song was completed, he coached the class using his gentle chest resonance at a moderate intensity. This pattern was repeated in each of the grade levels. Frequently during the day, he sipped tea from a lidded cup at the back of the room, maintaining hydration. He also delivered his comments to Moore by writing them upon a notepad for him to read. Moore did not react to Larken’s vocal use choices as though they were unusual, suggesting the vocal practices I observed were likely consistent with what he had previously seen.


Professional Demands

Larken specified a consistent choice to use his voice in moderation, saying, “I let my voice rest in between classes... And then I also utilize silence. I do some simple sign language, so I don’t have to speak every direction. I also try to maintain a fairly quiet level of voice whenever possible.” On his BQ, though, Larken indicated he did not use his voice safely in class, in extracurricular rehearsals, and during before or after school duties.

Larken described an early career teaching situation in which he had to consistently use a loud and intense voice.

When I first started teaching, first two years out of college, I was teaching band. I taught beginner low brass. There were probably about eight or nine kids and we were kind of up in the boiler room. I guess it wasn’t the boiler room, but it was where the air conditioning vent was. [laughter] So that was pretty much cranking the whole time. We were down in the Rio Grande valley, so the air conditioner didn’t turn off much except December – January. So, all through rehearsals, or sectionals, rather, it was always going, so I was just belting it out. (Interview)

A situation such as this is out of the teacher’s control. In Cougar’s Music room, the air conditioning system generated a low hum and ran for about ten minutes at a time several times per hour. Each time the system kicked on, Larken or Moore compensated with a slight increase in vocal intensity, escalating the force in the voice to sound in competition with the noise. This increase was subtle.

Larken specifically indicated he did not use loud or intensified voice as an aspect of his teaching and his duties did not cause him to use “Teacher Voice.” He did connect the louder, “Teacher Voice” with coaches, describing how PE and Music were called upon for crowd control during assemblies and other mass student groupings, citing that
they saw and had a rapport with all students, and had taught useful procedures to the entire school. Larken described the situation this way:

I certainly do some control. If it’s time to get started, I’m happy to step up and do some inhibitory response technique kind of things, echo clapping, some ‘yoo hoos’ or what have you. Things I typically use in my room, that everyone in the school is familiar with because everybody makes their way through my classroom every week. (Interview)

In the interview, “teacher voice” was not a term Larken used but, on the BQ, he described three moments which seemed suited to the use of “teacher voice:” “When a student ignores directions, when a student isn’t acting in a safe manner,” and, “when a student hurts another student’s feelings.”

Nearly at the end of the day, I observed Larken using his “teacher voice” for the first time. A first grader asked to visit the bathroom, then darted out the door. Larken called, “Ishmael, if you are going to go to the bathroom, you’re going to use your walking feet.” The boy returned to the door, resolutely turned, and walked out of the room. Larken immediately returned to his carefully modulated speaking voice. There were a couple other instances of increased intensity towards the end of Larken’s day: a student randomly playing glissandos up and down a glockenspiel who Larken gave a look and firmly told to, “Stop;” a group of girls distracted by a class passing in the hall whom Larken redirected by calling, “Thank you for your attention.”

As the day progressed, Larken began clearing his throat. This increased in frequency until I left the campus. On his VHI, he indicated his voice was, “never” worse in the evening and, on the BQ, reported experiencing vocal fatigue persisting over multiple days and into the weekend.
Larken and Moore reported differing vocal experiences of the end of the work week. Moore had described losing his voice by the end of the second week of student teaching and feeling vocally fatigued at the end of each week. “I cannot really say… that it feels or sounds any different on Friday than it does on Monday,” said Larken, which I know is not true for all elementary music teachers. The only real difference is if I’ve got a sinus infection or if I’ve got- if my allergies have kicked in and I’ve got lots of gunk on my vocal cords, but other than that I really feel about as strong. (Observation)

**The Lombard Effect**

Larken agreed a noisy environment lead to an instinctive increase in vocal intensity and volume and described his experience when teaching in the same small area as a noisy air conditioner vent. This instinctive intensification represents the Lombard effect, an involuntary tendency to increase one’s vocal intensity in response to increased background noise (Sataloff, 1991). On the VHI, Larken responded “never” or “almost never” regarding being heard in a noisy room, indicating he never or almost never had difficulty being heard in spaces such as their classroom or duty areas. He responded the same way in the interview and on the BQ.

Increased background noise came from the air-conditioning system, increased student numbers, increased student activity, class participation, the drone of the computer fan, music playing on the speaker system, telephone calls, a computer alarm, and hall noise (rolling trash cans, passing classes, opening and closing of the security door). While each of these are notable, the teachers did not seem to take notice of them either in the moment or in retrospect during the interview. Interestingly, Larken gave a story from a past teaching position which illustrated an increased vocal intensity on his part in
coordination with a noisy air vent, but he did not name such vocal use in his current teaching post.

When asked about guidelines to protect employees from noise, Larken seemed to equate “noise” with “hearing” but did not connect hearing with any change in vocalization.

Umm. I… I don’t think so,” he said, “Nothing [vocally]. I mean, I assume if the noise is overly loud that there is certainly some sort of guideline along those lines. But band directors, and probably elementary music teachers, too, should have some sort of hearing assistance to save their – save our – hearing, but I think most people don’t worry too much about that - until they get older. (Interview)

Physical health

Larken clearly articulated a distinct difference between his physical health, including sinus and throat, and his vocal health in and out of the classroom, citing allergens, sinus infection, or “gunk” on the vocal folds. It was this, health issues, which caused any vocal fatigue or hoarseness; medical issues resulted in a voice that did not function rather than work related hoarseness.

Larken agreed poor vocal health could affect a teacher’s ability to do the job. “And I think it impacts music teachers more powerfully … just because that’s your primary mode of communication. And especially for music teachers: you want to model a song or give instructions... So, yeah. That’s a powerful impact.” He went on, saying,

I also direct my church choir, so those things would certainly be impacted – have been impacted – from time to time… Anything that might require your voice would be impacted, whether it’s a hobby or just communicating with your family. (Interview)

Larken has a wife and daughter at home, linking this concern with Newsome and Trudell, who also mentioned the importance of their families.
Frustration

Larken gave an eloquent description of how it felt to work while experiencing vocal fatigue.

It’s very frustrating, I think is the first adjective I would have to use, because you just can’t do what you want to do. It’s kind of like if you break your leg. You’re just used to walking and all of a sudden you can’t walk. Only this is your voice, which is a hundred times more important and useful than your leg. And so, it’s very frustrating. (Interview)

Could such frustration lead a teacher to change careers? “Uh… Yes,” responded Larken. “I would think so. If it’s a consistent, constant problem, because it is so frustrating, and it is such an important part of what we do. I mean, it’s really, I think, your number one tool, after your heart, is your ability to communicate.”

Quality of Life

Larken reported currently having, “no problem” vocally on the SVHI and described his voice as “normal” on the VHI. He responded to 70% of the VHI and 44.4% of the SVHI statements as “never” having such experiences and his scores for both documents suggest he was experiencing mild to no vocal dysfunction. After completing the VHI and SVHI, Larken questioned his qualification to participate in this study. Later, just before the interview, Larken joked, “I broke your study!”

Hoarseness

Larken initially said a tired voice or hoarseness was not a normal part of teaching but seemed to change his mind. “Not for me, unless there is some sort of medical issue: allergies, sinus infection, something along those lines,” he said.

And then, typically, I’ll lose my voice maybe once or twice throughout the school year. And I guess that would be considered hoarse or just really not functioning. I rarely get to the point where I can’t make a sound. (Interview)
I asked him why this was, and he laughed. “Because I am super human! No… I don’t know. I have to say, the longer I teach, the less it seems to happen, which is kind of strange.” Not so out of the ordinary. Research has shown that teachers who experience vocal health, or the perception of vocal health, remain in the profession (Cantor Cutiva et al., 2013; Smith et al., 1998; Szymanowski et al., 2004). The inverse may also be true. Teachers who experience poor vocal health may leave the profession. The remaining teachers, the teachers who have longer careers with good vocal health, may be more resilient or may not perceive experience of poor vocal health as problematic.

Larken described hoarseness as more common for other teachers in his school.

I think most teachers have a visit by the hoarseness bug every so often. And I hear teachers around campus here that get hoarse from time to time. It seems there is always someone hoarse. Now that doesn’t mean that teachers are always going hoarse, but I think it’s a fairly standard occupational hazard just because we are using our voices so much. (Interview)

**Illness and Working**

Larken repeatedly connected poor physical health with vocal impairment. Had he ever experienced illness and come to work anyway? “Oh, yes. All the time!” said Larken. “Well, I shouldn’t say all the time, but yes. That’s typical, I should think.” I asked why. “Because it’s what I do! [laughter] I just roll with it. But the ‘why,’ I guess, it’s just you have to.”

Larken later defined when he, the only Music teacher on his campus, might be willing to take a day off for poor vocal health. “If there is nothing pressing at school,” he said. “If it’s the week of your Thanksgiving program or [the school ensemble]’s got a performance… That kind of helps to make those kinds of decisions for you, too.”
Vocal Health Training

Though Larken had attended vocal health workshops at the Texas Music Educator Association, he had not been provided training in vocal health, including what to do if the voice is unhealthy or becomes injured or how to use the voice healthfully while teaching. This included both his graduate school and undergraduate education as well as professional training since graduation. “Occasionally I’ve heard people recommend, ‘Well, try this or do this,’ but I wouldn’t say in a formal way. I’ve had and have heard more ideas on that in terms of singing in an ensemble, singing in a choir of some sort.”

Larken agreed a voice injury could be a repetitive use injury, but said, “I have heard that really the best thing, really the only thing you can do when your voice is, when you are losing your voice or going hoarse, is to try to not talk at all. Just give it a rest.”

Case Study: Dover Elementary

Dover Elementary was a lovely school of white stucco and tan brick which looked to have begun as a high school campus. The building was in the center of an aging community with small homes on one-way streets and urban elements of the city within easy reach. The campus featured strong security at each school entrance and, except for a fenced in parking lot and play area, was nearly completely self-enclosed. The campus had a robust community presence and the community participated strongly within the school. Dover had 665 students in ranging from Pre-Kinder through fifth grade and 94% of the students served are economically disadvantaged. The student ethnicity groupings are 94% Hispanic, 4% African American, and 2% white. Dover Elementary had 36 full time teachers, and an average student to teacher ratio of 18-1. The school has one Special Education teacher and six instructional aides. At the time of the study, seven of the staff
had over 20 years of experience and two teachers were beginners with less than a year of experience. The average years of teacher experience were 11 years. Female teachers outnumbered the males, 28 to eight. The campus had two administrators and the principal was female.

**Dover’s Music Room**

The Music classroom was in a cinderblock space which may have once been a science lab. The teacher’s desk was a very large work surface featuring the epoxy or resin top favored by chemists. The room had a sink on the far side from the teacher desk and large, locked cabinets. Roughly one sixth of the room was walled off by shelves and this area contained a makeshift storage unit for materials and books. The external wall of the room had two tall and narrow window units on either end with a wipe board spanning the center of the room. A ceiling mounted projector was pointed toward the wipe board and one small desk speaker on edge of the teacher’s desk pointed to the center of the room. A tall, thin air filter ran constantly, setting to the left of the wipe board. The ceiling was acoustic tile with fluorescent bulb lights and the floor was laminate tile.

The far side of the space contained four tall padlocked cabinets containing orchestral string instruments in various sizes. Near the right set of windows, an upright piano sat at a 45-degree angle to the room. A counter and sink took up the remainder of this wall. Above the piano and sink, a classroom clock and musically themed posters decorated the wall. The school library was located directly across the hall from the Music room and the wall of the Music nearest the school office backed a set of student restrooms and stairs to the second floor of the school.
Though the acoustic ceiling tile did cut some noise within the room, the Dover Music room was significantly more live than Cougar’s. The space was large and all surfaces were hard, easily cleanable, and acoustically active. The room had a diffused echo which was present even when students inhabited the space. When in use, the small desk speakers sent sound reverberating through the area and, like Cougar, provide more volume than intelligible sound. In Dover, however, the noise was much brighter and stronger within this sound-reflective area, making it difficult to consistently distinguish spoken words unless the listener was highly focused.

Meghan Newsome

Dover’s Music teacher, Meghan Newsome, had taught for 13 years, spanning Kinder through high school band, spending most of her career teaching band in a very small district in South Texas. Newsome held a Bachelor of Music, All Level Instrumental, and her primary instrument was trumpet. She also held a Masters in Education Administration. She took the Administration focus, “in order to learn all the ins and outs of the education system and to broaden my own scope of learning.” When I asked if she had plans to possibly work in arts administration at some point, she responded with, “Maybe someday.”

Newsome was a quick and busy personality. She had much to do and seemed to have several thoughts processing in her mind at all times, always moving from one task to another, from one duty to another. Simultaneously challenged by the opportunities and requirements of her position, perhaps specifically by her desire to handle her demanding position both successfully and gracefully, Newsome was clearly dedicated to her work.
Married with two children, she also shouldered the majority of schedule coordination and childcare for her family.

Newsome was the only music teacher on her campus and her schedule was fluid, usually changing from week to week. Her classes ran 40 to 45 minutes and she saw one class per grade level each day. Each class held around 22 students, resulting in approximately 660 students passing through her room each week. Of the eight-hour work day, Newsome spent between five and half to seven hours vocally active: either teaching or on duty.

Newsome saw all Kinder through fifth-grade students of Dover Elementary for Music class. In many schools, such as Cougar’s, Music and PE’s schedule are coordinated, sharing a fixed and consistent timetable. This was not the case in Dover, where Newsome’s schedule was not partnered with PE. PE had a fixed schedule. Music did not.

Newsome’s schedule was on a six day rotation, which she described as making lesson continuity between classes on the same grade level nearly impossible. The schedule was impacted by field trips, holidays, assemblies, testing, and other events which could result in one class visiting her room five times in a month and another on the same grade level only twice. As a result, Newsome taught the same grade level lesson to all classes regardless of the preparation the class may have had for the subject matter. Her hourly schedule was largely (but not completely) stable, though the grade level order frequently changed. The largest variable was when she would have this extra meeting time to provide, covering the extra planning period for two of the six grade levels of the school, and how the addition would affect her schedule.
In addition to teaching, Newsome was active in her district, serving on multiple committees. During lunch duty, she listed them off for me. “The campus leadership team. The district leadership team. The textbook committee. The discipline committee. The calendar committee. The student placement committee. And then I do everything else.” I asked why she had joined so many committees. “I want to be involved,” she said, “I want to have input.” In fact, the day I observed, Newsome left campus before student dismissal for a calendar committee meeting at the district office.

The day before my observation, Newsome’s schedule was normal, beginning at 5 am. In her words:

So, the day before probably went something like this... Woke up at 5 am to start my day... shower, dressed, make breakfast; 5:50: wake up husband and daughter to get ready for school/work. Pack lunches, scoop toddler out of bed, and load the kids in the car to take to grandparents' house. Arrive at school by 7:30 to get ready for my school day. School day begins at 7:50 and ends at 3:20. After school, went to pick up kids from grandparents, took them home and helped daughter with homework while I made dinner. Thursdays is Grey's Anatomy, so sat on the couch with my husband to watch it. During commercials, I like to look over my lesson plans and activities for the following week so I am comfortable when I go to teach it. 8 pm is bedtime preparations for my kiddos, bath/shower and all that entails and after that my daughter reads for 30 minutes and I read to my son. 9 pm is bedtime for the kids. During this time, I gather all things and put them in a central location that will be needed to walk out the door the following day (iPad, Lesson plan book, whatever resource material I am using). By 9:30 I am off to bed to start the entire process all over again the next day. (personal email correspondence, 2018)

While Pre-K did not come to Music, Special Education students were mainstreamed and attended with their classmates. As the PE and Music daily schedules contain gaps, these teachers were asked to use time not occupied with instruction to supplement coverage for other campus duties, such as an hour in the cafeteria and a half hour of before school student monitoring each day. In addition, Newsome provided coverage which allows an extra time for grade level meetings, collaborations, and trainings. When providing this
coverage for fourth and fifth grade, she used the time to create an “extra-curricular” choir of 45 students. This extra period for grade level work happened most weeks, but not all, did not happen on a regular rotation, and was in addition to her Music teaching and non-Music duties. “My husband has pointed out how much harder I work now,” she said, “than when I taught [middle school] band.”

The Day Begins

When I arrived at Dover Elementary, I had difficulty locating the entrance to the school. During the hour prior to the school day, the road in front of the campus became a one-way street. It took me a second lap around the school to locate and access the parking lot’s open point of access.

At the door, I buzzed to be let in, and waited. I had decided I was at the wrong door when a cluster of children walked up, buzzed, and were allowed in. I walked in with them and they pointed me to the front office. I joined a long queue of adults, most of whom were there to purchase school shirts, and signed in. Newsome was on duty in the front hall of the school, monitoring long lines of younger children as they awaited collection by their homeroom teachers.

Newsome remained largely silent during her duty: smiling, nodding, gesturing, but not speaking. She walked around the front edge of the lines of students and periodically smudged the backs of children’s hands with a candy scented Chapstick, a reward she called a “smelly.” The students’ voices rose and fell in the old foyer of the school and I hesitated to walk to Newsome, to distract her as she monitored the large number of children. This hall was a major intersection of school hallways and other
adults walked around or through the lines of kids, but only Newsome seemed to be observing the group.

Once the teachers had collected their classes, I waved to Newsome. She walked to me and smiled, welcoming me to the school. She spoke with a firm, presenceful chest resonance. I noticed her voice was perceptibly more relaxed and expressive than the vocal intensity she used on the telephone, which was completed in her car. We walked to her room and she described the day’s schedule, asked if I needed to store my lunch in a refrigerator, and let me know she was leaving immediately at the end of the day to attend her committee meeting. She quickly gave me a desk and chair, turned on the projector, double checked her materials, and the first class arrived. (K. Stephenson, observation notes)

**Observations of Voice Use**

As soon as the first students quietly walked in, Newsome’s voice both brightened and increased in intensity. She welcomed the class as they seated themselves on the floor, closed the door, and asked if the class remembered the song they had learned the previous week, “Tideo.” A few hands went up. Newsome sang the song a cappella for the class, using a mixture of chest and head resonance, then asked the students to join in singing and sang with the class. The third time through the song, she dropped out and sang cues words.

The second song, “I Knew You Were Treble,” was more for listening. A few students sang at times, joining the woman’s voice on the recording, but most listened and watched the video. Newsome danced to the music but did not sing. The class clearly enjoyed the video and song.

The third song, “Over the River and Through the Woods,” transitioned into a holiday theme. The recording featured children’s voices and the class sang along, using a slideshow with the lyrics. The class sang the song a second time to an accompaniment track. Newsome called out cues over the singing and accompaniment, “Good!” “Wait!”
“High!” “Wait!” “And here-you-go-.” She sang cue words within the song but largely coached the students to sing independently. Most of Newsome’s singing was straight tone.

The next two songs, one about pumpkin pie and the other about cranberries, were both in keys accessible for adults but below the children’s comfortable singing range. The students tried to compensate by singing an octave higher, changing from chest to head registration while singing, attempting to belt, to use force to make the pitches happen, or dropping out when vocalizing became uncomfortable or unattainable. Newsome focused upon the students who were not singing but did not address the changes in the students’ voice use, the challenges to sing tunefully in the adult voice keys, or how to sing with relaxed and healthful voices.

During the pie song, Newsome sang the first words of each phrase, the entire chorus, shouted the thematic interjections (“PIE!”), and cued the students to entrances by calling, “Ready, sing!” In this new key, I could hear Newsome changed how she used her voice during the chorus, perhaps by elevating her larynx, resulting in a tighter, more tense-sounding voice. This change of laryngeal position, a high belt, brightens sound by reducing the resonant space and is used in musical theatre and contemporary music. On her BQ, she responded, “no” to the question of singing outside a comfortable range while modeling for the students. This change in vocal sound was accompanied by tension in Newsome’s jaw, a more horizontally spread mouth, a thrust and elevated chin, and a stridency I did not perceive when she sang with a more neutral laryngeal position. While I did not observe vibrato during the vocalization patterns I just described, Newsome most often sang with straight tone while I observed.
During the cranberry song, Newsome again sang most of the time, her sound occasionally brightening and tightening. Her vocalization varied between a more relaxed sound with neutral and fluid physical postures and one more spread, bright, and tense sounds, with elevated chin, tightened jaw, and shoulders raising or becoming more stiffly held. As with the previous song, Newsome again spoke cues over the music and singing of the students. This song featured a 1950s style hand jive over an electric guitar riff. “I can’t hear you!” she called while hand jiving. “3… 4& jive!” “3… 4 & sing!” A baritone voice sang a featured solo and Newsome tucked her chin. She slipped into vocal fry, more closely emulating the baritone singer in range and sound quality. A few students sang along, but in a caricature of the man’s voice and with chins lowered to chest. Most students did not sing this section.

The next activity was a line dance featuring a repeating dance pattern. The class stood and, at the conclusion of each pattern, the students made a clockwise quarter turn before restarting the pattern. Newsome quickly moved around, keeping herself in the front of the dancing class as they rotated in a quarter turn pattern for each repetition of the dance. Newsome demonstrated the motions, calling the directions over the music, “Forward! Back! Right! Left!” These shouted sounds, the sounds vocalized over the dance music, closely resembled the belt-like sounds of her more tense song. After the big finish, she rhythmically shouted, “Mac and cheese, everybody freeze!” and seated the class.

The class ended with a toss and catch bean bag activity to “Let Us Chase the Squirrel.” Newsome sang the folk song a cappella and tossed a bean bag to each student.

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5 “Let us chase the squir-rel! Up the hick’ry, down the hick’ry,
“Let us chase the squir-rel! Up the hick’ry tree!” (Schinhan, 1962, p. 512).
The goal was for each of the students to catch the bag on a beat and return it to her on the next beat and to maintain the steady beat of the song. Newsome did not ask the class to sing with her. Most of the students sat quietly and waited their turn. A few sang with her. Newsome progressed down each seated student line, bent over at the waist, walking, singing, tossing and catching the bean bag. Each consecutive student received the next beat of the song. If the students either did not catch the bag or delayed returning and missed the beat, she responded by slowing the song or extending the note’s duration.

“Let… us… chase… …the… squir-____ rel!___ Up… the____... hick’ry… …
down_______ the hick’ry…”

By the third repetition of the song, having tossed and caught her way through most of the class while singing the song, Newsome was winded. “Whew!” she exclaimed. The fourth repetition resulted in signs of physical fatigue: vocal intensity increasing with load, audible aspirated breath, and breath in the singing voice from reduced efficiency of vocal fold closure. When she reached the final student, Newsome stood, smiling and breathing a sigh of relief. Though the song was not complete when she reached the last student, she stopped singing midphrase, put the bean bags away, and concluded class.

After the class left, Newsome prepped for the next grade level, speaking with me as she did. “I make sure to pace myself,” she said.

Save up my voice. I do my best. I get bad, but that’s the… the bad decision is mine. As soon as I get scratchy, I drink water. I try to sing softly so I can hear the kids. Strain comes from mostly correction and redirection.”

I asked her to clarify what correction and redirection meant. “[Correction is] fixing mistakes or getting the sound you want from the kiddos. [Redirection is] discipline. Correcting negative behaviors in the classroom.”
Newsome used her voice for most of this lesson and each subsequent lesson I observed. On her BQ, she indicated using her voice safely in class and during extracurricular rehearsals. She also reported experiencing vocal fatigue over multiple days and into the weekend, and she indicated on the VHI her voice was, “sometimes” worse in the evening.

This pattern continued: chest resonance, mixed chest and head resonances, tense sounds which might indicate an elevated laryngeal position, singing with or for the students, calling over student voices, instruments, and recorded accompaniment, adjusting her voice in imitation of the range and quality of male singers, and occasional keys which were challenging for Newsome, her students, or both. At times, even in echo, the students sang up to a whole step above or below her pitch. Inaccurate tuning and intonation was not redirected.

During Kinder, Newsome played a recording of a man singing “Itsy Bitsy Spider.” The song was performed by a jovial adult light baritone. The students, asked to sing along, struggled to do so, especially the interval leap down to low sol (“And dried up all the rain… the itsy-bitsy spider…”). Newsome repeatedly asked the students to sing along, talking over the song. The students strove to comply. Newsome did not address the lowness of the pitch.

As the day progressed, I noticed a light fixture in the room buzzed at a pitch of B. Her air filter ran in subtle dissonance, pitched at B-flat. A machine outside the far window of the room occasionally ran with a central pitch of G-flat. Newsome commonly sang her a cappella songs on a tonal center of E.6 At lunch, I asked if she ever

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6 Pitches identified from the piano in the classroom. As Newsome did not use the piano, I am unable to verify the quality of the instrument or accuracy of its tuning.
experienced challenges with tuning in her space. “No,” she answered. Did her students have difficulty tuning? “Nuhh-uhh.” She shook her head. “Why?”

As she left for lunch duty, Newsome described her philosophy regarding student silence in the cafeteria. “I know they [administration] want them [students] to be quiet, but I don’t find that fair. They always have to be quiet. If they’re safe, I’m not saying anything.”

The cafeteria was distinctly colder and distinctly louder than the rest of the school. Ambient sound of idle children and hard, reflective surfaces created a noisy environment. The PE teacher walked around, interacting with the children, audible over the din. Newsome also walked the room, always at a distance from the PE teacher. She smiled, waved, interacted with students via dramatic faces, and seldom spoke. When she did, she employed a low pitched, chest resonant voice with enough intensity to cut through the noise. She spent time adjusting the children into the mandated boy-girl pattern, opening milk containers, tying shoes, and constantly moving.

Towards the end of the lunch period, she walked out to the quiet foyer of the school, the same space as her morning duty. Four classes exited the cafeteria to set on taped lines upon the floor. Newsome clapped, snapped, and tapped a pattern. The students echoed. She invited the students to sing “Tideo,” and there is a 50-50 split on student speaking or singing the song. Many of the kids droned upward in pitch, but she had selected a tonal center too low for most of the students. Try as they might, most were unable to match pitch in this key. Adults came and talked over the speaking and singing children. Some classes stood to leave.
“You know what I haven’t done in a long time?” Newsome asked cheerfully, “sung ‘The Cat Came Back!’” As an adult shouted for a boy to follow the class, Newsome began singing the song, using a mixed resonance. Most students in the hall quieted to listen to the story and nearly all joined in singing the refrain. More classes entered the hall to wait and others left with their teachers. Each teacher collecting a class was happy, positive, and each projected their voice over Newsome’s singing, communicating authority and attracting their class’ attention. Each time a class rose to leave, the ambient sound in the hall increased and Newsome responded with increased intensity. Each time a class left, the ambient sound in the hall lowered and Newsome responded with reduced intensity.

Newsome indicated on her BQ her before school duty and lunch duty were both situations in which she needed to increase the intensity of her voice. She also mentioned several times in the interviews that her choice to engage in this way, when combined with medical complications, had led to vocal challenges.

My voice is hoarse just because, you know, with my allergies and the drainage I’ve had. I start off the morning great and the more I talk (and it has nothing to do with yelling at the kiddos), but the more I use my voice, the more sore and inflamated it gets. (Interview)

After lunch duty, Newsome returned to her room and ate at her desk while checking emails. She described this as her tradition, using the time to calm, rest, and refocus before the next class. We spoke little, and, over this rest, her voice relaxed. For the first time since students entered her room that morning, Newsome was speaking without added intensity.
Descriptions of Professional Voice Use

During the interview, Newsome said she did not consider herself a professional voice user because she had never been trained to use her singing voice. “My training was mainly focused upon instrumental music, and so I never took private voice lessons.” As I observed, I noticed several times when Newsome, her students, or both demonstrated vocal challenges during singing, challenges in pitch matching, intonation, resonance placement, and endurance. Between classes, I asked her about tuning in the room, working with recordings, student singing skill development, and student singing participation. Her responses, such as my question of difficulty tuning in the room, indicated she was either unconcerned with, or unaware of, these situations.

After the observation, I asked Newsome if she felt confident teaching her students to sing. Her response is long, and I include the entirety it provides insight both into her feelings about her voice and her philosophy of teaching music.

I feel very confident teaching my students to sing at the elementary level. At this stage in the kids' lives it is more about exploring music and understanding music rather than mastering it. I feel the foundations are the same for both singers and wind players. Proper breathing techniques, knowing when the sound needs to go up and knowing when it needs to go down, reading rhythms...things like that. I make sure they don't strain at the neck trying to get that last little breath out. And I tell them to pretend like they are about to dive under water at the pool when they take their breath.

Now, with that said, I would not feel comfortable teaching choir to any kiddo in the sixth grade and up. This is simply because I feel this is where they start to really focus in on embouchure, diction, and producing a first division of sound by blending and balancing the group as a whole.

On a side note, some years ago a friend of mine who is a choir director at a high school in the coastal bend area was looking to hire a choir director of her middle school feeder. She told me I would have the job if I just applied just because she knew me and my work ethic. I turned her down and told her that I would not want to do a disservice to the kids because of my lack of training in voice.
I know there are people who take a job because they get what they can get, and I don't knock that at all, but on the flip side… I don't think it's justified for a Music certification to get you a job in any Music area. My two cents is that there should be a separate certification for choir, band, orchestra, and elementary music. They should not be all thrown in the same boat, because sometimes the captain of that boat (the teacher) causes a major shipwreck and all on board (the students) are left stranded. (personal email correspondence, 2018)

Newsome was clear from the start she does not consider herself a vocal professional as she has not had vocal training. Here, she states she would not accept a choral position as she does not have the training to develop ensemble skills in singers, doing so would be a disservice. She also indicated the elementary experience is for exploring rather than mastery. In her interview, she stated, “I just know the basics of what you need to do in order to be a good singer.”

Newsome’s responses were mixed regarding safe voice use. She described six or more vocally active hours during the workday and said, “I save my voice as much as I can” for classroom activities. “Most of my classroom schedule revolves around me using my singing voice, especially with the younger students,” she said. For duties, she reported in one location of her BQ that she was not careful of her voice and another that she did have duties for which she increased the intensity of her voice.

When I observed her before school, as she monitored children in the hallway, Newsome smiled and nodded but remained silent. During lunch duty, however, she spoke and sang frequently in the hall as she interacted with students and staff. The students and staff responded casually, indicating this was normal behavior and not attributable to my presence.
In the cafeteria, as in the hall before the school day, she smiled and gestured and seldom spoke, reflecting her interview comment: “I’m silent during lunch duty. I don’t speak, and I do it on purpose.”

**Vocal Professionals**

Newsome felt her training had not prepared her to be a professional voice user. “I was an instrumental major,” she said. “I did take choir… but as far as getting basic training of a professional voice teacher, I didn’t have that opportunity.” Newsome’s students had challenges matching pitch and understanding which registration (chest or head) to use when singing. “I use my voice every day,” said Newsome. “Everything that my kiddos do, I model… through song… I use my voice all the time. I sing songs, do different routines in the classroom, I sing… and the kids sing back to me…”

Newsome did consider her voice an indispensable tool of teaching but described vocal care as something that was simply not a part of her day. When I asked how she took care of her voice, she laughed, saying, “I try not to yell,” then continued, “I make sure to drink plenty of water.” Regarding warming up her voice, though, she said, “Honestly, I don’t think about it because I’m doing before-school duty in the hallway. So, I’m pretty much rushing to my classroom to meet my first group of kiddos.”

**Professional Demands**

Newsome connected an aspect of her career’s vocal demand with personality and habit, saying,

Before I was an elementary music teacher, I was a band director. I’m used to speaking loud and I think that’s just carried on with me through my elementary career. …You have some teachers who are just very soft-spoken… and you have other teachers like myself who they are naturally loud and so, I think it depends upon the personality.
When asked to describe her voice at the end of the work week, Newsome took time to respond. “At the end of the work week, it is… Well, it depends,” she said.

It depends upon the severity of how— If I’ve strained my voice, if I’ve had to yell or anything like that… At the end of a work week, if I’ve had a good week, it sounds just as good as it did at the beginning of the work week. If I’ve had to yell, or anything else like that, by Friday, my voice is kind of raspy.

In between classes, I asked her if her work played a role in her vocal health. She responded quickly. “Absolutely. Two kiddos at home, eight hours of school day. I can tell if I’ll have a good evening at home. I can tell – my throat is crackly or sore?” She made an expressive gesture with her hands. “Didn’t drink enough water or I yelled too much. It doesn’t happen often… Weather change, or [I teach] class after class… Same sort of difference.”

The Lombard Effect

Newsome’s voice use increased in response to ambient sound in her environment. This was observable in her classroom as well as during her lunch duty. Increased background noise came from air ducts, student numbers, instrument use, the school bell system, musical accompaniment, class participation, and more. Newsome addressed neither these ambient sounds nor her vocal response to them in either observation or during the interview.

Newsome acknowledged an increase of sounds in the environment could lead to an increase in intensity of voice, and that a teacher’s work could be impacted by a weak, tired, or sore voice. “They could see it as diminishing the quality,” she replied. “I think it depends on the teacher.”
Physical Health

Newsome clearly articulated a relationship between her physical health and her vocal health. “Right now,” she described, “Especially during – as my allergies are going crazy, I make sure to drink plenty of water.” Later, she went on to specify the extent and duration of her allergies were resulting in recurring vocal challenges. “I’m going through that right now. My voice is hoarse just because, you know, with my allergies and the drainage I’ve had.”

Illness and Working

Newsome had come to work while ill but had never taken off work for poor vocal health. “Oh, yes. All the time.” Why? “It’s easier for me to go to work sick than it is for me to make lesson plans for a sub,” she said. Even the previous Friday, when she cancelled our interview because she could not speak, she worked.

I didn’t have a voice at all. It really – It felt like needles in my throat every time I tried to talk. Whenever I know things like that are going on, I make my students aware and we have, we do something we call a ‘silent rehearsal.’ Everything is done through hand motions or real quick cue cards that have one or two words on them, and the students know what they mean. (Interview)

Frustration

Though she had a plan for what to do if she came to work ill or in poor vocal health, Newsome did not describe the situation as satisfying. She indicated she physically had to work harder in this situation, saying,

It’s even more tiring! [laughter] Because you have to work harder to get the sounds that you want, or the kiddos won’t give you the sounds you’re asking for. [silence] And I would also say it’s frustrating because I’m doing my best to lead by example, and yet I can’t do it sometimes. (Interview)

Newsome also agreed, with stipulations, that poor vocal health could lead a teacher to change careers.
I would think so, especially if— I teach elementary music, so we don’t do any of the UIL activities or I’m not involved in any of the choral clubs that are at a lot of the schools. I would say, me, no, but other vocalists who take their profession very seriously [emphasis added], if they can’t perform or they see their performance going downhill, I think they would change professions. (Interview)

Quality of Life

Newsome reported currently having, “no problem” vocally on the SVHI and described her voice situation as “normal” on the VHI. She responded to 93.3% of the VHI and 97.2% of the SVHI statements as “never,” suggesting she perceived mild to no vocal dysfunction. On the day of the observation, she was experiencing hoarseness and had rescheduled the interview because her voice was gone. I asked Newsome if there were guidelines to protect employees from exposure to noise. “No,” she answered.

As the observation day progressed, Newsome coughed and cleared her throat with increasing frequency. At one point, she choked while calling out dismissal directions and made a silly face. She pretended to stumble, calling to the class, “I hate it when I swallow air!”

Hoarseness

Newsome connected the experience of hoarse voice to her personality more than to the vocal demands of her job. “Well, because, I mean, I… I teach six classes a day. I teach Kinder through fifth grade. And, so, you know, I use my voice all the time. The only time I don’t use my voice is in the instance of last Friday” (when she lost her voice). She went on to say, “It’s my personality.”
Vocal Health Training

Newsome agreed a voice injury could be a repetitive use injury but had never been taught what to do if her voice became unhealthy or injured. “When I was in choir, we didn’t go over how to take care of our voice.” She went on.

Training? No. But suggestions from vocal majors, yes. For example, I was told to drink lots of water and, if your voice – if you do damage your voice, try to not talk ‘cause you don’t want to damage it any further. Drinking warm substances, such as warm hot tea and things like that. (Interview)

Case Study: Gardendale Elementary

Gardendale Elementary was located within the same large school district as Dover, a district spanning a vast area of the central and southern portion of the city. Gardendale’s campus, a fascinating combination of old and new, was comprised of renovated building elements blending into brand new facilities and an aging neighborhood of narrow streets bisected by train tracks and chain link fences. The homes were small and run down, and several large yards contained rusted automobiles, discarded furniture, or piles of building materials. This residential area is less than ten minutes from the heart of downtown.

The campus had 363 students in raging from Early Childhood through fifth grade and 97% of the students served were economically disadvantaged. The student ethnicity groupings were 95% Hispanic, 4% African American, and 2% white. There has been conflict in the media for the last decade or so as the city wished to tear down several residential spaces within this area and replace them with apartment buildings and high-cost housing zones. More than concern of gentrification, the families of the neighborhood
were unwilling to be moved, many of them having lived in this area, sometimes within the same small homes, for multiple generations.

Gardendale Elementary had 22 full time teachers and an average student to teacher ratio of 16-1. The school had three Special Education teachers and seven instructional aides. At the time of the study, 10 of the staff had over 20 years of experience and the campus had no inexperienced teachers. The average years of teacher experience were 18 years. Female teachers outnumbered the males, 20 to two. The campus had two administrators and the principal was female.

**Gardendale’s Music Room**

The Music classroom was close to the gym, two short turns away down a hall and through an exterior door of the school. It was a large, carpeted room with office space on one interior wall. Both the Music teacher and the visiting instrumental teacher used this office. I did not observe in the Music classroom area and only entered it with Trudell for a short time during lunch. I walked through the room which was clean, carpeted, smelled new, and was extremely dark; dark enough that I had to pause for my eyes to adjust before I hurried to follow Trudell into her office.

The room featured a strip of narrow windows at the top of the exterior wall of the school. We walked through the room quickly and I was unable to make out details of the space. There were low shelves, a wipe board, a projector, and a shadowy jumble of items at the back of the room which I did not have an opportunity to explore. There may have been desks, instruments, boxes, and more.

The narrow office contained two desks, filing cabinets, and was stacked with papers, boxes, and instruments, several of which had to be shifted to allow me to sit in the
second chair. “Will this bother you?” Trudell asked. I assured her it would not. The main
desk, Trudell’s, contained a desktop computer. As we spoke, Trudell checked her emails
on this device. I did not have an opportunity to explore either of these spaces for more
detail because Trudell left the campus as soon as the day ended, and the room was kept
locked.

**Gardendale’s Gymnasium**

On the date of my observation, Music took place within the gym, situated
remarkably near the train tracks which run to the right of the campus. The gym had two
sets of locked double doors and featured a buzzing doorbell for permission to enter. The
sound was not loud and sometimes could not be heard when music was playing, resulting
in banging upon the door for entry. The PE teacher had an instructional aide and this
woman answered the door.

On the opposite side from the double doors and buzzer, the back wall of the gym
had restrooms, a storage closet for equipment, and the teacher’s office. The room had a
sprung wooden floor, fluorescent lighting, and one student desk. There were six
miscellaneous chairs along the right wall: student, folding, padded reception chairs, and a
short armchair which may have come from a living room set. There were two large air
vents on the back wall (an air intake and a supply) at the ceiling above the restrooms.
There were only two small, curtained windows in the gym, each set within a narrow side
door one either side of the building near the back wall. They were probably designed to
be opened for a cross breeze. The projector was set atop a wheeled cart and aimed at a
clear space of wall. The lower cart shelf contained two desktop speakers and a corded
The walls featured hooks, pegs, rope tie-offs, the school rules, and posters on sportsmanship and motivation.

There was a small recess area with climbing equipment outside the gymnasium. This was fenced in between the rear parking lot, the railroad tracks, and the side wall of the gym. The area was not used during my observation.

The acoustics in the gymnasium were what one would expect from a large, high ceilinged, empty space with noisy air units and a train track running outside the back wall. The room had a large reverberation element and echoed strongly. The gymnasium was separated from the main building by a covered walkway, receiving no noise from the school and sending no noise into the classrooms.

During my observation, speakers were placed upon the floor of the gym and marked off with a set of four orange cones. Sound from the speakers reflected about the room but the speakers were not powerful enough to combat the acoustics of the space. While the speaker volume was loud, the sound was difficult to understand. Within the space, the buildup of noise (reverberating music from speakers, singing voices of children, and general noise within the room) was significant.

**Nance Trudell**

Gardendale’s Music teacher, Nance Trudell, had taught for 30 years within this district, spanning PreK through eighth grade and Middle School Band. She held a Bachelor of Music – Music Education and double majored in voice and French horn. She also holds a Masters in Instructional Technology. Trudell taught at one elementary campus for years until enrollment dropped and her position was split. She now teaches at two campuses, neither of which is her original school, and is the only K-5 music teacher
on either campus. Gardendale also housed sixth graders and these students chose between Art and Band. Middle school teachers visit once-a-week to teach these classes.

Trudell was an intense and brusque personality. She moved at a fast pace and was highly focused, speaking quickly and directly and, at times, cutting me off to reply. Trudell was assertive and frequently spoke of making her intentions known, establishing boundaries with administration, and making her situation work for her. Her motions were purposeful, directed, economic, and consistently contained a degree of tensile engagement.

Trudell was married and had three children, two adults and one in middle school. Her older daughter had completed a masters and her son was completing his doctorate. Her family was important to her and she was active in their lives. In fact, she gave up most of her performing outside of school because, “My family became more important to me than singing. My children needed me more.”

Trudell’s schedule for each campus changed significantly from week to week. She divided her time between the two campuses and might spend three days at Horseman, her second campus, and two at Gardendale, or three mornings at Horseman, the afternoons at Gardendale, and one full day at each school. The administrators on each campus decided the Music schedule based upon their campus’ needs. While the time schedule and grade level order were completed with grade level teacher input, Trudell usually found herself on the other campus when these weekly planning sessions were held and, consequently, had no voice in the decisions of either school.

Her schedule could change in grade level order, the number of students in each class grouping, how many classes were combined (single classes, a class and a third, a
class and a half, or two classes), and which combinations, if any, attended together (English / Bilingual, English / Mainstreamed, English-English, multiple grade level pools). As a result, Trudell wrote one set of lessons and used them on both campuses, teaching the lesson regardless of who came to her room, adapting for whomever arrived.

Gardendale’s administration emailed her schedule to her each week. Horseman’s administration seldom let her know ahead of time. Frequently, Trudell learned her schedule upon arrival. “It hasn’t been easy,” she noted, and her stress came along with the teaching supplies and materials as she drove between campuses. She loved the students and teaching at Gardendale. “I would stay here, if I could, but they have partnered this school with Horseman. I have to do both.”

As Trudell’s schedule always changed, she did not have before or after school duties at either school and tended to leave as soon as her workday was over, usually to go home where she did most of her planning. She did have a 30 minute lunch duty at Horseman, “and I don’t talk. I use sign and, if they ignore me, whatever. I don’t yell, and the kids there aren’t used to that.” She did not have any extracurricular groups. “There’s no more pay, my voice suffered. The kids can’t come after school. It’s not fair that some kids can participate, and others cannot.” Her conference period was used for recordkeeping, grade input, or for travel between schools. Her lunch might be on one campus, the other, or in her car as she drove.

Trudell described the day before my observation as, “normal.” She was at Horseman in the morning and Gardendale for the afternoon, teaching the same lessons at both schools. At the end of the day, she went home to her family. She was happy to participate in the study, saying, “Any way that I can be a positive influence on someone's
career, life choices, and/or path, I am willing. That's what I was made for. To make this world a better place, one person at a time.”

**The Day Begins**

The front of Gardendale’s campus had a narrow parking lot which fit less than a dozen vehicles and curbside parking was not allowed. I circled to the back, parked in the large, new lot, then could not find an open door. I texted Trudell to let her know where I was and, as I decided to walk around the campus to the front, a child of Kinder age happened by. I pointed to my teacher badge and smiled, knowing campus security rules probably intended he not let me in… but he did. I thanked him and asked where the office was. He smiled and pointed up a set of stairs. I walked up, signed in at the front office, and headed back down to the gym.

I promptly became lost in the turning stairwells, connective halls, and locking doors where the renovation of the old and construction of the new met. I headed back to the office to ask for a guide and found a homeroom teacher walking with her class. She asked where I needed to go. As it happened, she was taking her class to the gym. On the way, we met Trudell who had come looking for me.

Trudell chatted as we walked. She spoke in her chest registration and with intensity, but her voice matched what I had heard over the telephone. She spoke of student transportation, of the children’s shelter which the school serves, and of upcoming auditions for soloists and two students to waltz during the coming sing-a-long. Then she moved into my reason for observing. It was clear she had been thinking since our interview. “Vocal health doesn’t hinder or prevent [my work],” she said. “It doesn’t
matter. If I can’t sing, the kids sing. They take over, the ‘mini-me,’ mini Music teacher. ‘Let’s see… can you be a little Ms. T? I’m preparing you to take my job!’”

Observations of Voice Use

On the day of my observation, Trudell’s classes were combined with PE in the gym for 50 minute lessons and she was spending the entire day at Gardendale. The students were practicing for a campus tradition, a sing-a-long. Trudell introduced me to the classes as a doctoral student, describing the different levels of degrees to be earned in college. Her pitch elevated slightly and her vocal intensity increased, even though there was little ambient noise in the gym.

Trudell turned to me, gesturing to the chairs. Her voice relaxed, returning to the chest registration she’d used in the hall as she spoke with me rather than the combined classes of students. “Sit where you want. Are you sure you want to stay all day? We’re doing the same thing for all the grade levels.” I reminded her I was observing how she used her voice as she worked a full day. She nodded. “Let me know if you need anything.” She turned back to the class, her pitch again elevating slightly as her vocal intensity subtly increased.

The classes sat in lines on the floor facing where the words were projected on the wall. Half of the gym lights were turned out, making it easier to read. Trudell stood in front of the students, moving about during the singing but always remaining in front of the children, dancing, singing, and mouthing the words. In between songs, she would quickly speak instructions and reminders with added intensity, slipping them in before the next song began.
The PE teacher spent most of the day sitting, working on her laptop. Periodically, she would stand to join in singing or walk around the room. She clearly enjoyed improvising to “Feliz Navidad” and did during most grade levels. The instructional aide functioned as crowd control: leading each grade level in reciting the school rules before class, answering questions, opening the door when someone wanted in, and moving the students from the singing area at the back of the gym to the dismissal area near the wide doors. On her own volition, the aide arranged for a custodian to bring me a student desk, for which I thanked her.

Trudell’s lesson for each grade level were the same: a review of fourteen songs which all grade levels would sing in the upcoming combination of Math Night and holiday sing-a-long. As Trudell did not know who would come, everyone sang most of the material with a few exceptions. Older students did not review music focused upon the very youngest at the school (“Must Be Santa” and “December is a Time”) and the lower grades did not practice the more challenging music (“Walking in the Air,” “When Christmas Comes to Town,” and “Glo-Glo-Glorious”). Trudell was using this lesson at Horseman but that campus was not hosting a performance. Most of the music came from old textbook series or from *Music K-8.* The dances and non-textbook songs were either found and brought in by Trudell or were successfully used on other campuses and recommended by those district music teachers. The song series had not changed in several years.

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7 *Music K-8 Magazine* is a product of Plank Road Publishing, Inc, a company which specializes in providing supplementary material (listening activities, songs with both rehearsal and performance tracks, focuses upon composers or ethnic materials, music for classroom instrumentation, classroom connections, music theory, movement, and more). www.musick8.com
The Sing-a-long Set List

The sing-a-long consisted of 14 songs:

1. “We Wish You a Merry Christmas” featured children’s voices. An octave in range, this piece was sung in a mixture of chest and head resonance.

2. “Santa Claus Rock,” a high energy, 50s style dance song, featured children’s voices and had some simple parts which isolated boys’ and girls’ voices. Mostly sung in chest resonance, this song spanned less than an octave and contained a few notes which required head resonance.

3. “Feliz Navidad” contained a combination of children’s voices and an adult male and spans an octave. The male singer soloed on the lower A section, performing in chest resonance. The male vocalist sang in a mixture of chest and head in the higher B section. The children joined in on this section and also sang in a mixture of chest and head resonance.

4. The students sang with the original recording of “Walking in the Air,” from The Snowman, sung by boy soprano Peter Auty. This song, just over one octave in range, was performed mostly in head resonance with just a few notes sung in mixture of chest and head.

5. “Crazy Jingle Bells” was a loud and raucous dance featuring autotuned mechanized music and a helium-esque, caricaturized male voice that reminded me very much of Pee-wee Herman.

6. “Must Be Santa” is a traditional call and response song spanning less than an octave. On this recording the call was sung by a solo child and the response was a
group of children, all singing in a mixture of chest and head resonance. Pre-K through second grade sang this song. 3rd through 6th grade did not.

7. “December is a Time” was a very simple piece featuring a very young child’s voice singing in head resonance. Pre-K through 3rd grade sang this song. 4th through 6th did not practice this.

8. “Jingle Bells” featured a male and female soloist on the verses and children’s voices on the refrain. Both male and female soloist sang the verses in chest resonance. The verses of “Jingle Bells” span just over an octave and reach lower in range than the refrain. The refrain spans only a fifth and remains in the higher range of the song. The children joined in with the adults on this portion of the recording. In each class, Trudell stopped for a brief moment after this song to give instructions and reminders regarding the sing-a-long performance.

9. Trudell provided the original recording of “Mamacita, Donde Esta Santa Claus?” sung by 12-year-old Augie Rios in 1958. This song spans a sixth and was sung in chest resonance.

10. Trudell also provided the original Polar Express recording of “When Christmas Comes to Town,” a duet for two children and sung by Matthew Hall and Meagan Moore. This would be performed by two soloists at the sing-a-long, and would also include a traditional waltz, but the older grades were encouraged to sing (and to consider if they wished to audition). The range of this song is an octave and a third.

11. “Rudolph, the Red Nosed Reindeer” began with an adult female soloist singing the reindeer name-list. The soloist was joined by children’s voices on the main
body of the song. The recording did not include the traditional interjections (“Like a lightbulb!”) and the song’s range spanned one octave.

12. The next piece, “Glo-Glo-Glorious,” was for two-part choir and the students sang along with a publisher’s demonstration recording of a children’s choir. The range of this song is an octave and a third and was sung in a mixture of chest and head resonance.

13. “Have a Happy, Happy Holiday” was another simple piece with an octave range featuring a small group of children’s voices singing in a mixture of chest and head resonance.

14. The final song, “Children Go Where I Send Thee,” was an African American cumulative spiritual and the recording used a woman soloist, singing in chest resonance, as each number was added. During the cumulative section, the children joined with the woman and sang in a combination of chest and head resonance.

Most classes usually ended just before “Children Go” or just after the song began.

The recordings Trudell used were a mostly child voices with a few adult voices included. She sang in a comfortable range with most of the songs, using head or mixed resonance when she could. When a recording featured a solo male singer, she often dropped the octave to better match his voice.

The students sang most of the music, though a few songs seemed unfamiliar. Many students sang in head resonance. When the solo male recordings played, several students attempted to drop the octave along with Trudell. In the fourth, fifth, and sixth
grades, many boys did this, their success increasing with age. Trudell did not address these challenges with the classes while I was observing.

Trudell spent most of her time standing over the students at the front of the class. Most teachers and assistants I observed did the same. Trudell never entered the group of children and only twice, during “Crazy Jingle Bells” in first grade and kinder, moved around the singing students to another side of the group. During these grades, she changed positions to model the dance in front of where the students were facing.

Trudell sometimes used the microphone from the cart, increasing her vocal volume with the volume dial on the monitor. Sometimes, she sang without it. There did not seem to be a pattern to her choice of using the microphone or not, though she used it more and more frequently as the day progressed. I did note that the cord of the microphone, which was only about ten feet long, would limit how far she could travel. Later, when I asked about using a microphone, she told me, “only when I need it.” I asked her to describe a situation when she needed a microphone. We were interrupted, and she did not answer. At times, Trudell spoke over the student singing and over the recording, “I can’t hear y’all!” “Boys!” [The boys’ turn to sing.] “Girls!” [The girls’ turn to sing.] “You know this one!” When she did so, her voice substantially increased in intensity.

When speaking with individual children, she sometimes used a more relaxed voice. At these times, I could not hear her above the sounds in the room. When singing with the classes, she blended her voice into the texture, singing with the students and not over them. Other times, she stepped back and allowed the children to sing on their own. There were several occasions when she sang over both the students and the recording, both with and without the microphone. Most notable of these was “Children Go Where I
Send Thee,“ which usually fell during dismissal. Trudell would sing over the moving students and arriving teachers, usually using the microphone to project her voice over the increased noise within the gym.

In between second and first grades, as the first grade classes were arriving, a homeroom teacher walked in with a little boy and asked Trudell to take him. The child was crying, upset because half of his class was testing for something and he was not in the group. Trudell moved to comfort the child as the teacher left. At first, she was hyper-jovial – with added intensity and heightened pitch in her voice as she spoke with the boy. Then she shifted into nurturing and her voice relaxed into a conversational pitch, barely discernable in the room. I noted this might be the first time I heard her natural voice. The child told her of an achievement in class and Trudell responded with verve, her intensity suddenly raising again, this time accompanied by a pitch leap of nearly an octave. “Oh, my goodness!” she exclaimed. “That’s cool!” She patted the boy on the back and escorted him to join the grade level.

The first grade group, accompanied by another two teaching aids, began without about half of the students as these children were taking the test of which the teacher had spoken. The first grade classes was more off task, more noisy, and more prone to squirming in place than the other groups. Trudell addressed behavior frequently during this grade level, addressing children by name during the singing and in between songs. She projected her voice into the room with an increase of intensity, usually while lowering her pitch.

About half way through the period, these children began trickling into class. The door buzzer would sound, was answered by the PE assistant, a handful of children would
walk in and be escorted to the group. These children joined the back end of their class lines, away from the wall projection and Trudell. At one point, several rows were shifted to the right to create a new row in the center of the group to accommodate students. As these children were added to the group, the noise in the gym would increase and then, with the assistance of the three teaching aids and the PE teacher, would subside into singing. Trudell and the children never stopped the singing process, simply continuing as this took place.

A train passed during first grade. I noticed the whistle first, then the rumble on the tracks. The train passed right beside the gym and playground, separated from the school by the chain link fence, and I watched it through the small window. The whistle was, as designed, obnoxiously loud. Everyone in the room ignored it. This was an extreme example of the Lombard effect in action. I lost most of the sound from the speaker system into the sound of the train. Trudell and the children kept right on singing, intensifying their voices and to sound over the rhythmic rumble of track and piercing whistle of horn. Several of the students also shifted into a more strident sound. Trudell did not turn up the music, did not use the microphone, and did not stop the classes’ singing.

After the first grade classes left, Trudell approached me. “This group has a hard time with everything,” she said. This group had come with two more teaching aides as well as exhibiting more of a challenge with attention and self-control. This group had also been split in half and was continuously interrupted by the door and children rejoining their classes.

Rules. Notes. Smart words [vocabulary]. I take educational opportunities as they happen. I don’t let it stress me out. Lessons like this, I’ll talk more. I sing all the
Singing is the main thing. Days go by when I don’t drive games and dancing, but singing? Always. (Observation)

By mid-day, I noticed Trudell began singing “Feliz Navidad” with what may have been an elevated larynx, narrowing and brightening her sound. The “Crazy Jingle Bell” dance followed, and she shouted dance directions over the sounds of the children, adults, and music. Mid-way through the dance, Trudell began to cough, went for the microphone and used it for most of the remaining class. She did not drink anything until lunch. I asked her about drinking water, which she had repeatedly spoken of on the BQ and during the interview. She laughed. Drinks were not allowed in the gym. “Not today!” she laughed. “Not in the gym!”

**Descriptions of Professional Voice Use**

Trudell cited five vocally active hours each workday. Between her two schools, she saw 35 to 40 classes per week, with an average of 22 students per class, resulting in about 814 students rotating through her room(s) weekly. Trudell had not taught an extracurricular choir since her one-campus position had been split. She had, at one time, taught “choir” as an experience within music class, but she stopped years ago for a variety of reasons.

Trudell was clear she was always careful to use her voice safely in the classroom, mentioning this multiple times during the interview and indicating the same on her BQ. “I have been teaching for so long that my ‘loud’ voice is no longer necessary. I just let them [the students] know the expectations and we get to work.” She also spoke of using recordings, either ones she made of her children or ones supplied as teaching materials. These became important voice-savers because they allowed her to control how frequently she modeled.
I used to have quite a bit of unhealthy vocal dilemmas when I first began teaching. I had to use my voice for every single class, both for singing and for disciplining. It was really bad. I had to visit vocal doctors and medical doctors for fatigue, vocal abuse, etc. As technology became accessible, it really helped me. (Interview)

Technology meant she had options. “I could give vocal examples via technology rather than just my own voice. I would never have been able to teach this long without the aid of technology. My voice would not have lasted.”

Trudell sang in demonstration for her students. She also vocally cued the singing and supported the students vocally. While I was present, Trudell was vocally active more than half of each class period. This is not likely representative of what happens in Trudell’s lessons as this was a rehearsal for an upcoming performance, a rare event. Trudell did say, however, recordings were important as they freed her from having to rely upon her own voice. While she did use recordings with demonstration voices for every song, she also frequently sang along. Trudell also repeatedly indicated, while she sang all the time, her work in the classroom did not impact her vocal health. On the BQ, she indicated experiencing vocal fatigue over multiple days and into the weekend but reported on her VHI “never” having a worse voice in the evening.

When Trudell first expressed interest in participating in this study, she questioned her qualification, describing herself as “very vocally healthy.” In the interview, Trudell described her healthy voice.

My vocal health has improved extremely… I was thinking the other day how, wow, my voice just sounds so… just clean and, uh, I don’t have that abuse how I hear in people my age. [clears throat] So, no, I’ve been doing good, vocally, yes. I’ve been taking care of my voice. (Interview)
Vocal Professionals

Trudell described herself as a professional voice user, saying, “I use my voice in a professional manner in order to deliver lessons and sing at different venues professionally.” She also agreed her voice functioned as a tool, saying, “I use my voice as a tool in order to sing, chant, and to deliver lessons.”

Caring for her voice consisted of hydration, diet, and rest. “I take care of my voice by drinking only water and sometimes I place lemon in that water. I make sure and keep my body and my voice healthy by eating right and drinking the correct fluids that I need throughout the day.” When I asked if she warmed up her voice to prepare, Trudell indicated she did not. “I do warm up my voice more if I’m going to use it in a professional venue… I don’t warm up my voice [for teaching] as well as I do when I’m gonna perform [elsewhere]. [When I do] I warm up with the kids.” This meant singing along with the students was her act of warming up.

Was there a difference between the instruction she gave at school and performing professionally? Trudell described the difference.

Oh, there is a huge difference between performance and between singing at school. I don’t sing as powerfully, I guess you could say, or with my ‘opera voice.’ I don’t sing at school with that tone, in that manner. I sing more – a childlike voice. Of course, I’m a grown woman so I can’t sing like a child. I use a lighter, um, not so… There is a lot of difference. … The range is not as wide with the children as it is professionally. (Interview)

“Childlike,” for Trudell, meant use of a lighter mechanism, more head resonance, and a vibratoless tone. I asked if she used her voice more at a professional venue, a place where she sings professionally, than at school. Trudell worked to put her thoughts together before responding.
No, uh, no. [pause] It’s just, yeah. [pause] Professionally, I don’t need my voice [for as long], maybe an hour, probably more – total. So, no, I need my voice more at school because I’ll sing… [pause] No, I would have to say, during the school day, hour-wise, hour for hour, I do more singing at school than I do at venues. (Interview)

This was the only time Trudell seemed at a loss for words.

**Professional Demands**

Trudell equated the vocal demand of her career with personal responsibility. “I’m in charge of me,” she said. “It’s not necessarily the situation, it’s how I handle the situation.” She independently circled back to this idea at the end of the interview, amending her response to include some situational ideas:

It’s really upon the individual, because you are going to have people who take care of their voice and listen to the warning, and then you’ll have people that keep on smoking and keep on drinking and keep on, you know, drinking sodas and doing the things that are vocally unhealthy and keep on complaining about it… You have to be careful because if a person doesn’t take care of their voice, it’s always – not just speaking or singing. It’s what they eat and what they digest, or even like the environment: molds or like that. That could affect the voice as well. Not just their environment, but also the air, what’s in the air – if it’s an old room they’re in. I’ve been in a lot of different rooms and some of them are musty and moldy and that makes a difference, too. (Interview)

Trudell was clear she did not perceive herself using a loud or intensified voice as an aspect of teaching. “What they call it? The ‘Teacher Voice.’” She emphasized her unwillingness to go there, her determination to protect her voice. “If you’re more, ‘I’m not going to use that voice, you’re not going to get me there,’ then, you know, you can stay vocally healthy.” While Trudell did have lunch duty, it was on Horseman’s campus. Her determination to control her voice use extended to the cafeteria. “I’m silent,” she said. “They might think I’m being rude or something, but I’m not going to talk over all those kids in the cafeteria. That’d really be messing up my voice.”
She did connect the louder “Teacher Voice” with PE teachers and firmly said she
did not work with crowd control. “Oh, no. I get somebody for that. I don’t do that.” It
was a matter of vocal health for her, and she was willing to draw a boundary with her
administration for it. “They know I’m not going to do it. I’m not going to yell and scream
over the kids [clearing throat] so they don’t ask me! But usually the coaches… they have
that louder voice, that ‘coaching voice,’ so they usually do it. If anybody can settle down
the kids, the coaches are going to.”

When asked to describe her voice at the end of the work week, Trudell compared
her current situation with what she experienced at the beginning of her career.

It’s usually okay [at the end of the work week]. Unless there is an illness or
something, I’m – right now I’m ill, so – I’m coughing, and I have congestion.
That’s from having a cold. That’s not from singing. So, usually I’m okay at the end of the week. My voice is not sore. When I first started teaching, oh, it was
pretty bad – real, real bad, because I was not used to... You know, I did all the
work, everything... I didn’t have any voice [at the end of the week]. (Interview)

The Lombard Effect

While being introduced to a class in Gardendale, I personally experienced the
Lombard effect in action:

During four of the six grade levels, I was introduced to the classes. I walked to
the front of the room (when asked), waved, smiled, and then returned to the back
of the gym. Two grade levels were asked if they had questions and students raised
their hands. Both times, I responded to the questions in the group and found
myself increasing my intensity as I did so. The first time, I forgot the microphone.
As I answered, and the child’s face showed they could not clearly hear me, I
thought about the sound of the air conditioning vent to my right as I increased my
volume. “This is the Lombard effect,” I thought. The second time, I remembered
the mic but didn’t opt to ask for it. It would take too long to get, and I didn’t want
to take up class time. I was aware that it was easier, more expedient, to simply
speak over the noise, to compensate and be done.

After one of the classes, a bold student eyed me as the class lined up and he
visited my little desk to sweetly wish me a “Merry Christmas.” I smiled and
answered back, “Merry Christmas to you, too!” The gym was noisy: the aide directing students, Trudell singing the backwards counting refrain of “Children Go Where I Send Thee” from 10-1, the students lining up, homeroom teachers calling for their classes, children talking to each other. I was quite aware of my increased intensity and pitch to compensate with the ambient noise. I was a living the Lombard effect. (K. Stephenson, observation notes)

Increased background noise came from air duct ventilation, student numbers, student activities, class participation, music, a passing train, teachers talking, classes entering and leaving the room, and other factors. Trudell did not seem to take notice of them in the moment, did not mention them during the interview, and did not indicate them on the BQ.

**Physical Health**

Trudell firmly agreed poor vocal health could impact a teacher’s ability to work. “Oh, yeah. Definitely. Every teacher, ever single teacher, loses their voice once a year. Every single teacher. Not one teacher goes years without losing their voice.” She had personal experience with poor vocal health, having sought treatment for it during her early teaching career. “A lot of teachers have that raspy voice, that poor vocal health,” said Trudell. “The majority of teachers that are of my age, or even a little younger… It’s abuse. I think, PE – you know, the coaches – and the music teachers, abuse their voices quite a bit.”

**Frustration**

For Trudell, working with vocal fatigue or a compromised voice meant having to change how she approached teaching, and that change seemed frustrating for her.

Oh, yeah. When you can’t speak, you have to find another way. … It’s, ummm… it’s challenging because you’re – Like me, I’m trying NOT to sing. So it’s a time where I’ll do songs that the kids already know, or activities they already know, because that way, I don’t take off. (Interview)
Quality of Life

Trudell reported currently having “no problem” vocally on the SVHI and described her voice situation as “normal” on the VHI. She responded to 86.6% of the VHI and 75% of the SVHI as “never,” suggesting she perceives mild to no vocal dysfunction. At the time of the observation, Trudell was experiencing hoarseness.

Are there guidelines to protect employees from noise? “No,” answered Trudell.

Hoarseness

Trudell considered a tired or hoarse voice normal for other teachers but not herself. Her description seemed to cast her as an exception to the rule. “It is a normal part of teaching. The majority of the teachers I know have vocal nodules, have vocal abuse, you know? Have that raspy voice, are probably no longer singing professionally any more like they used to because they just can’t. You know? It’s just teaching kids. ‘Just do it.’”

Illness and Working

The tone of voice Trudell used when describing working while ill suggested taking time off was equivalent to concession. “I don’t take off because I already know that I’ll be alright. I don’t have to leave my place, because I talk less, and I don’t sing at all.”

Had she ever taken off work because of vocal complications? “Nope!” she answered. When I asked if she had experienced vocal complications and come in anyway, she contemplated before responding. “Yes... Like, this couple of weeks I’ve
been having this cold, so I come to work… Uhm, mmm… I guess because I’m used to it.” She paused, then brusquely concluded, “I don’t know. I’m not taking days off.”

**Medical Treatment**

Trudell had sought help for vocal problems near the beginning of her career and suggested it was challenging to arrange with her district.

At the beginning of my teaching I had nodules and, so I had to go to a voice professional… What she would do was train me on how to use my voice properly. But I had to pay for that. It was a medical reason, in other words. … I had to get a note from the doctor that said I could only talk so many minutes during the day, stuff like that, and they almost put me on administrative leave, or whatever they call it. They almost put me on leave because they said, “You can’t do your job effectively if you don’t use your voice. You have to use your voice.” So, it was not a, it was not something that… you know. They didn’t like it, in other words. It was not acceptable. [clears throat] They didn’t understand about the vocal health stuff. (Interview)

“They,” meaning administration.

I asked if her administration had supported her during this process.

No. Uh-uhh. No, I had to get a doctor’s notice and I had to take it to HR and, oh, and she gave me a hard time that whole couple of years. ‘Cause it took me a couple of years to get rid of those nodules. So, she gave me a really hard time those couple of years. …Yeah. It was tough. [clears throat] But see, conflict makes you stronger! [laugher] You learn how to persevere. (Interview)

**Vocal Health Training**

Trudell had received medical treatment but had never been provided training in vocal health. “Uh, no. Not training, per see, no. Not even in college!” Trudell spoke of her medical treatment, suggesting her work with an ear-nose-throat physician and a speech language pathologist were forms of rehabilitative training. Bringing the results back to work with her, as she mentioned previously, was problematic, but necessary. “It
wasn’t a good reaction, but, I mean, it had to be done. I had to let them know. I’m not going to give up teaching, but this is what I’m going through.”

**Summary**

In this chapter, I presented the findings from three case studies of elementary music teachers as they described vocal use, the experienced demands of their voices, and their thoughts of vocal health and vocal professionalism. The stories of these teachers were derived from interviews, three full workdays of participant observation, three sets of questionnaires (the VHI, the SVHI, and the BQ), and follow up emails. In this way, readers may objectively view the situations from the participant’s own words, a strength for qualitative research design. Chapter Five will provide analysis and interpretation of these findings framed in context by literature in the field. Chapter Six will draw conclusions and make recommendations both for further study and actions within the fields of vocal health, elementary music education, and teacher preparation.
Introduction

The purpose of this multiple case study was to examine the thoughts about and understandings of vocal health as held by elementary music teachers and to observe teachers’ voice use through a workday. Improving awareness of how teachers think of, protect, and consider the professional vocal demands may improve the responsiveness of support structures currently in place as well as expand and clarify preparation for teachers entering the field. Helping teachers protect their voices may help these professionals preserve and protect their careers.

The previous chapter gathered the results from three interviews (INT), three full workdays of participant observation (OB), and three collected sets of questionnaires (Voice Handicap Index / VHI, Singing Voice Handicap Index / SVHI, and Background Questionnaires / BQ). Concepts were grouped together into useful, descriptive patterns. This chapter will present and discuss the central findings in reference to literature in the field, staged in relevance to the research questions. As Yin (2003) described, the intent of this qualitative approach is to bring together data from various places with the intention of describing a situation from many perspectives (p. 99). The resulting synthesis is intended to clarify and frame the complexity involved in the vocal health of teachers. The chapter ends by refocusing upon the conjectures stated in the first chapter. The research questions are as follows:
1. How do elementary music teachers describe their occupational vocal practices?
2. What perceptions do elementary music teachers have of their environment, including the:
   a. professional demands placed upon their voices,
   b. acceptable levels of vocal health, and
   c. the status of their voice as a professional tool?

This research is comprised of three case studies. As such, it is impossible to generalize results to any population of elementary music teachers. In some situations, the depth of these descriptions which may allow others to relate these experiences to their own lives. Bloomberg and Volpe (2016) described this concept as, “transferability,” suggesting a strength of qualitative research is, “how (if at all) and in what ways understanding and knowledge can be applied in similar contexts and settings” (p. 47). As such, music teachers and other vocal professionals in comparable situations may see elements of themselves in the context of these descriptions and find understandings of their own experiences within the described lives of these three teachers.

**Discussion**

In a 2010 study of teacher voice usage, Hunter and Titze identified nearly 25% of the workers of the United States as occupational voice users and teachers represented 16% of that figure. The number of teachers was estimated to be nearly 3.3 million in 2004 (Roy et al., 2004, p. 282). Occupational voice use demands an extreme degree of vocal endurance and, simultaneously, a consistent level of vocal quality to meet job-related expectations (Hackworth, 2007; Morrow & Connor, 2011). The unique combination of demands inherent to the field of teaching place teachers at risk to the development of vocal illness and injury (Hackworth, 2009; Mehta et al., 2016; Morrow & Connor, 2011; Smith et al., 2017; Yiu, 2002) and research suggests the numbers of voice
disorders for teachers are growing (Roy et al., 2004; Smith et al., 1998) and that the subject taught may play a role in vocal health (Nerrière, Vercambre, Gilbert, & Kovess-Masféty, 2009; Thibeault et al., 2004).

At the elementary level, teachers use their voices in both singing and speaking activities all day long, including extracurricular ensembles and other student groups, increasing the vocal demand for this population. This versatility of the voice is important for music teachers and is inherent to their work (Hackworth, 2006). Solberg and Duax (2000) found that music teachers reported being vocally active for 90% of the workday, 46% of which was singing. Morrow and Connor (2011) demonstrated music teachers’ vocal dosing was increased by the situations unique to their field: longer periods of phonation, wider ranges of pitch required, and vocalization at greater intensities 2011, findings supported by Smith, Sandage, and colleagues’ research in 2017. “Classroom teachers were not comparable with music teachers,” Morrow and Connor (2011) indicated, “in the degree to which vocal demands were an integral part of the job” (p. 370). How then, do elementary music teachers understand and describe this vocal demand?

**Research Question 1**

How do elementary music teachers describe their professional vocal practices?

**The Voice as a Tool**

A “tool” may be defined as a device used to perform work, as something required to perform one’s work (“tool,” 2011). All three teachers agreed their voices were tools

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1 The concept of the voice as a tool is also specifically addressed in research question 2c.
they used, tools indispensable for the teaching of music, citing singing, chanting, providing instruction, classroom management, modeling, and other uses of the voice. Observation showed the teachers’ days were consistently filled with vocal use as a vital aspect of completing their work. As described, and as observed, the teachers used their voices to perform their jobs. As described, and as observed, use of the voice was imperative to teaching music at the elementary level.

Åhlander, Rydell, and Lõfqvist (2012) noted teachers, as vocal professionals, require, “flexible” voices, “to instruct, discipline, clarify, and for attracting interest and attention” (p. 2). This effort to use the voice effectively as a foundational aspect of the professions may be problematic if the teacher does not have the skills to do so healthfully (Kuchler, 2012). The flexible voice, used for multiple aspects of a teacher’s day, requires skill to use in a healthful manner, and is both described in theory and observed in practice as a vitally important tool in a teacher’s career.

**Descriptions of Professional Voice Use**

Participants in this study cited between five to six and half vocally active hours each eight-hour workday. Larken had a fixed schedule and saw his classes in 25-minute rotations (exchanging classes with PE). He saw 60 classes a week and averaged 16 students per class, for an average of 960 students rotating weekly through his room, not including any extracurricular ensemble participants. Newsome had a semi-fixed schedule, usually saw her students in 50-minute sessions, and saw a minimum of 30 classes a week. These classes averaged 22 students per class, for an average of 660 students rotating weekly through her room, not including her extracurricular group. Trudell did not have a fixed schedule, saw between 30 to 40 classes per week and averaged 19 students per
class, for an estimated average of 665 students rotating weekly through her room(s).

Larken and Newsome also taught extracurricular ensembles that met once a week, adding between 18 to 60 more students respectively. Both also served before and / or after school duties.

These high numbers of students and high numbers of class sessions are reflected in Morrow and Connor’s 2011 study which focused upon the difference in vocal experiences between music teachers and classroom teachers. Music teachers taught kinder through fifth grade, classroom teachers taught a single grade level between kinder and third grade. Music teachers averaged 475 students and 46 individual class sessions per week while classroom teachers had a schedule which allowed for some adaptability and averaged 17 students per week (Morrow & Connor, 2011). The differences in workload represent a vast difference in the vocal load demanded of music teachers, and the load represents the use of the voice as a professional tool. In this study, all three teachers exceed Morrow and Connor’s 475 total students seen.

When asked, all three teachers enthusiastically affirmed the voice as a tool of teaching. “It’s the way I help my students understand, how I convey the importance of music… how I explain things,” Larken described. “It’s how I sing and demonstrate concepts.” Newsome agreed. “I use my voice every day,” she said. “I sing songs, do different routines in the classroom… kids sing back to me.” Trudell specified, “I use my voice to sing, chant, and to deliver lessons.” By their own words, what makes their voice a tool of teaching music is the content, the very act of musical instruction. While each teacher performed this differently, the root of voice being both content and method was the same for each.
Music teachers may be vocally active up to 90% of the teaching day and 46% of this time was in song (Solberg & Duax, 2000). Music teachers also experienced 48% more phonation time than classroom teachers, a significantly larger vocal load (Morrow & Connor, 2011). This was observable in all three classrooms, in which each teacher quickly and consistently shifted between speech and song while guiding instruction and managing their classrooms.

In a 1998 study, Smith, Lemke, Taylor, Kirchner, and Hoffman reported music teachers taught an average of more than six classes per day, resulting in almost 5 hours of continuous teaching each workday. This amounted to an average of 6.3 hours of talking at school each day. These numbers closely resemble both the described and observed experiences of Larken, Newsome, and Trudell.

Class sizes may vary for music teachers as music classrooms are often not regulated in student numbers. Additionally, music teachers often teach combined classes. All three participants in this study were observed doing so and both Larken and Newsome reported teaching additional groups, adding to the total number of students seen. Bernstorf and Burk noted music teachers routinely work with large groups while in preparation of programs, compounding the nature of vocal load and vocal stress, a result supported in other literature (Benninger & Murry, 2008a; Bernstorf, 1992, cited in Bernstorf & Burk, 1996; 1996; Natour et al., 2015).

Findings about class size and voice disorders do sometimes conflict. Kooijman et al., (2006; as cited in Cantor Cutiva et al., 2013) proposed teachers with large class sizes had approximately three times the occurrence of voice disorders than teachers of smaller
classes. Åhlander et al., (2012), however, found teachers with larger class sizes were less likely to report voice disorders than teachers with smaller class size.

There may be many reasons for this rooted in the complexity of work environments and required duties. Nolteriek (1984) found that elementary music teachers tend to teach more often in large group situations. Small groupings, such as sectional rehearsals or smaller class sizes, were a less regular portion of the music teacher’s schedule. Nolteriek also noted that elementary music teachers are more likely to respond vocally to students when in these large groups. This would, by nature, compound the vocal load and the potential for voice disorders among elementary music teachers.

Larken, who had the lowest average number of students per class, was the most visibly aware and cautious with his voice use. Though none of the teachers reported poor vocal health, he was the closest to indicating a perception of vocal symptoms. Newsome and Trudell each had larger class sizes, reported no experience of poor vocal health, though both were suffering from illness and poor vocal quality at the observation. Both had irregular teaching schedules and Trudell’s schedule was complicated by teaching at more than one campus. Newsome indicated she would not report vocal problems, which supports the literature (Roy et al., 2004; Smith et al., 1998; Szymanowski et al., 2004; Van Houtte et al., 2011). Trudell, however, not only indicated she would report vocal problems, she had actually done so in the past.

Newsome was the only participant to specify her duties required her to increase vocal intensity or volume, though all three said their work in the classroom did not impact their vocal health. Studies have demonstrated that few teachers specifically connect the act of teaching to the development of voice problems and even fewer admit
voice problems had limited their ability to perform their job (Smith et al., 1998; Smith, Gray, Dove, Kirchner, & Heras, 1997; as cited by Smith et al., 1998). Some of this may be due to a concern that poor vocal health could reflect negatively upon their career or teachers might be unaware that support is available (Roy et al., 2004, 1998; Sataloff, 1991; Smith et al., 1998; Szymanowski et al., 2004; Van Houtte et al., 2011).

Mr. Moore, Larken’s student teacher, was the exception to this. He described his student teacher duties as requiring him to increase vocal intensity and volume and that his work in the classroom had impacted his vocal health. I did not ask him if his work had been limited by his vocal health, though he did volunteer that he vocally rested over the weekend and had recuperated. Moore described having a tired, sore, or weak voice as potentially affecting lessons, class management, and discipline.

Participants responses were mixed when asked if they were careful to use their voices safely. On the BQ, Larken reported that he was not careful to use his voice safely during duty, in the classroom, or during extracurricular rehearsals. In the interview, however, he said, “I’m not just, although perhaps from the outside it looks like it, but I’m not just banging through the day. I’m thinking about how I use my voice and how my students use their voices.” After observation, it may be that his routine of vocal caution is well established, and his caution may be well established habit.

Trudell was clear that she was always careful to use her voice safely in classroom. Though she teaches at more than one campus, she said, “I have been teaching for so long that my ‘loud’ voice is no longer necessary. I just let them [the students] know the expectations and we get to work.” This suggests the concept of “loud” as being equated with “discipline.”
She also spoke of using recordings, either ones she made of her children or ones supplied as teaching materials, as important voice-savers because they allowed her to control how often she modeled. “When I first started teaching,” Trudell said,

Oh, it was pretty bad – real, real bad, because I was not used to... You know, I did all the work, everything, I’d sing all the time. I gave examples all the time for the kids. I didn’t have any choice, other ways to show examples other than my voice. (Interview)

Later, however, recordings were available, and she had options. “I could give vocal examples via technology rather than just my own voice. I would never have been able to teach this long without the aid of technology. My voice would not have lasted.” By technology, Trudell meant audio video equipment, recordings, and downloadable or shared content found on-line.

Newsome’s responses were more mixed regarding safe voice use. For classroom activities, she said, “I save my voice as much as I can.” For duties, she reported on the BQ that she was not careful with her voice. She countered this in her interview, consistently restating her caution with her voice. At times, she conflicted her words in observable practice.

Before school, as Newsome monitored children in the hallway, she smiled and nodded but did not often speak. During lunch duty, while in the cafeteria, she was similarly cautious. As her duty progressed to the hall, the same hall as before school duty, she interacted with students and staff vocally and nearly constantly. In her interview, she commented “I’m silent during lunch duty,” she said. “I don’t speak.” Trudell reported not speaking during her lunch duty either, adding, “and I do it on purpose. They might think I’m being rude or something, but I’m not going to talk over all those kids in the cafeteria. That’d really be messing up my voice.”
Both Larken and Trudell described themselves as vocal professionals, Trudell because she used her voice in a professional manner and Larken because he was paid to use his voice. Both used their voices to sing professionally elsewhere. Newsome agreed she used her voice as a tool of her work, her work required the use of her voice, and described one of the main aspects of her work was demonstration singing. She did not, however, consider herself a vocal professional because she had not been trained in the teaching of voice and had taken no studio voice lessons. “I was an instrumental major,” she said. “I did take choir… but as far as getting basic training of a professional voice teacher, I didn’t have that opportunity.”

For Newsome, her definition of professionalism seemed to be balanced on her major or on the concept of concert singing rather than the demands of her work. “I just know the basics of what you need to do in order to be a good singer,” she said. Newsome’s students had challenges matching pitch and understanding which registration (chest or head) to use when singing. The observation that she values her voice as a tool of modeling in song, but her students were challenged in singing, does suggest a gap in her preparation to teach voice. Her response was not focused upon her student’s voices but on her own experience and ability to sing. The interesting and unexpected finding is how this may relate to Newsome’s approach to teaching song, most specifically to meeting her students’ pedagogical needs as they learn to sing.

“I use my voice every day,” said Newsome. “Everything that my kiddos do, I model… through song… I use my voice all the time. I sing songs, do different routines in

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2 In hindsight, asking Newsome how she defines “good singing” or “how to be a good singer” would have been valuable.
the classroom. I sing… and the kids sing back to me…” When you consider the nature of Newsome’s professionalism as being paid to use her voice, and her described importance and frequency of voice use, her voice could be considered the very substance of her profession. Yet, Newsome does not consider herself a professional voice user because she was not trained as a singer. Likewise, Newsome’s students had challenges matching pitch and knowing how to tackle situations such as singing along with a voice in a different range.

While all three teachers considered their voice as a tool for teaching, and all three acknowledged a change in vocal health could change how they taught, none of the teachers described a regular practice of caring for their voices as professional tools, including a vocal warm up before teaching. Trudell commented, “I do warm up my voice more if I’m going to use it in a professional venue… I don’t warm up my voice [for teaching] as well as I do when I’m gonna perform.” This comment suggests she feels differently about the professionalism of singing while in concert and the professionalism of singing while teaching.

I asked Trudell for more detail of this difference. She spoke of vocal quality and tone (the timbre of “opera voice,” of singing in concerts, as compared with modeling for children), the difference between an adult voice and that of a child (she described children’s voices as “lighter”), and of range (“professional adult” range versus a child’s, which is “not as wide”). Her comments may indicate she feels “professional” usage, or usage in a performance other than teaching, would be more vocally demanding for her. This frames Trudell’s next description of duration of use in a fascinating light.
When I asked Trudell if she used her voice more at a professional venue than when at school, she worked to put her thoughts together, saying,

No, uh, no. [pause] It’s just, yeah. [pause] Professionally, I don’t need my voice [for as long], maybe an hour, probably more – total. So, no, I need my voice more at school because I’ll sing… [pause] No, I would have to say, during the school day, hour-wise, hour for hour, I do more singing at school than I do at venues. (Interview)

Trudell says she uses her voice hours more while teaching yet does not prepare her voice for professional rigor as well as when she is going to perform at an outside, “professional” venue. Though Trudell cited five vocally active hours each day at school and one at other venues, she warms up her voice more for non-teaching work.

Larken, who considers himself a professional voice user and his voice a tool of teaching, said, “You know, I don’t do a whole lot. I probably should do more.” He went on to say, “It’s just kind of catch as catch can, kind of happenstance. Either I do it [warm up] or I just don’t really think about it.” Larken was the most demonstrably vocally aware teacher of the three, the most careful to modulate his voice use and maintain what he described as a, “fairly quiet spoken voice.” He also specified that he warmed up his voice when working with his church choir.

Newsome, who does not consider herself a vocal professional but does consider her voice a tool of teaching, describes active vocal care as something that is just not a part of her day. When I asked how she took care of her voice, she said, “I try not to yell,” then she laughed, and continued, “I make sure to drink plenty of water.” Regarding warming up her voice, though, she said, “Honestly, I don’t think about it because I’m doing before-school duty in the hallway. So, I’m pretty much rushing to my classroom to meet my first group of kiddos.” Though Newsome does not consider herself a vocal
professional, she mirrors the other teachers in describing her voice as a professional tool, not having a consistent method of caring for her voice when teaching and describing vocal performances outside of the school as both more rigorous, more “professional,” and more “serious.”

The concept of singing inside the classroom as less “professional” than singing outside the classroom is interesting. Certainly, students are prepared at many universities with a main goal of a high degree of performance readiness. Even music education majors are coached with the professional rigor in mind (Vincent, 2007). The thought that classroom singing is somehow less specialized (as Newsome and Trudell suggested), or less rigorous (as Newsome and Larken suggested), is countered in the literature in the field, but this may represent a nuanced insight into teacher’s views of the working voice. Professional singing uses the voice in specialized fashion, with extended engagement of the mechanism in specialized forms, and this presents a rigorous usage which is what each teacher seemed to suggest. “Professional” or “serious” singing is rigorous. The inverse would suggest non-“professional,” or classroom, singing is not rigorous, but this is countered by research on many fronts. Duration, frequency, intensity, external influence (dirty air, many classes, long workdays, speaking or singing over instruments, competing sources of noise) all generate an atmosphere which increase the vocal load for teachers. These may also represent what the participants described as not impacting their voices at work. These confounding conditions may also represent aspects of professional rigor for the voice which teachers do not perceive.

Research has found that vocal illness and injury may result in disruptions and interference in professional life and the location where the voice is used may be a factor
in the development of a vocal disorder (Paoliello, Olivera, & Behlau, 2013; Sataloff, 2005) and that choices in voicing behavior are a central component in vocal longevity (Keidar & Menges, 2013, p. 356). If this is true, then classroom singing, even if not as taxing in range and robust, short term output as outside performances, could potentially affect these more “professional” engagements. Likewise, these performing engagements, the ones teachers have been trained to produce, could affect the professional realm of the classroom. This, however, was not mentioned by any of the teachers. Classroom work was described affecting performances opportunities outside of school, but were not mentioned in the inverse, even when describing the outside performances as more “professional.” This insight, held by each teacher, may potentially be a confounding element in how these teachers think about and care for their professional voices.

Larken and Trudell, both vocally trained, described themselves as vocal professionals who used their voices as tools to perform their work. Newsome, instrumentally trained, did not consider herself a vocal professional, even though she described her voice as essential to her work. The conflicting nature of these responses points towards an important difference in both description of practice and the thought behind practice itself. All three teachers described the crucial place of the voice within their work. The nature of what this meant, however, was subjective to each teacher, which was reflected in the care and use each teacher demonstrated in both observation and description. This may require more qualitative research, investigating more information specific to each teacher’s circumstance.

Doherty and van Mersbergen (2017) suggested the study of music educators cannot be generalized as there are too many personally specific variables at play. Years
of experience, individualized physical health, previous training, professional expectations all play into individual perception. For example: an extroverted teacher trained for performance in song and experienced with spoken voice projection on the stage and who transfers this knowledge to the classroom cannot be compared with an introverted school counsellor who switched subject area mid-career, entering the music classroom with a changed certification, and who also has three children at home. The two cases simply are not equivalent in the usage of voice. Likewise, a teacher without an assigned classroom who moves the music instruments (and music events) from classroom to classroom and whose program does not have adequate funding for sufficient instruments or teaching materials cannot be compared in vocal demand with a teacher who has a classroom which is acoustically designed for music study and who has funding for materials which support a healthy learning environment of student musical experiences. Again, the two cases are simply not similar.

While individual cases may not be analogous, larger population similarities may be gathered into relevant pools. As Doherty and van Mersbergen suggest, subsets of music educators can be studied to begin painting a landscape of common challenges, what they call “domain-specific needs” (2017, Conclusions and future directions, para. 1). In this way, researchers may begin to define the requirements for music teachers as vocal professionals.

**Professional Demands**

Participants in this study cited between five to six and half vocally active hours each eight-hour workday. Larken was vocally active significantly less than this as he had a student teacher in his classroom. At the end of the day, though, he taught at the nearby
university, increasing his vocal load. It is also important to note that Larken’s student teachers would each work on his campus for six weeks. His interactions with these student teachers would increase his normal vocal load.

Newsome and Trudell, by the nature of the lesson observed, were more active than their estimating vocal activity. Though hourly estimation seemed reasonably accurate, research suggests teachers may overestimate the duration of their vocally activity when self-reporting. In Mehta and colleagues’ 2016 study, teachers represented the highest average of hourly phonation of any group. While there may be many reasons for these inaccuracies, such as age, sex, or classroom experience, the authors suggested the overestimation of voicing could be ascribed to “poor awareness of voice use” (Mehta, Cheyne, Wehner, Heaton, & Hillman, 2016, p. 639).

Of the three teachers, Larken was the most observably cautious with his voice. During the day, he used sign language, instrumental cues, proximity to students, and a careful modulation of his voice. He also had a student teacher who taught a portion of the day. Given the interaction before and after school, and in between classes, this might not represent an increase in vocal rest.

Larken did not identify with the descriptive of “Teacher Voice,” though he did connect this vocal quality and use with PE teachers. I did witness Larken increasing his intensity a few times in a manner which could be termed “teacher voice.” Each of these was related to discipline in the classroom, which was a situation he had identified as perhaps calling for the use of increased intensity. Both Newsome and Trudell also increased their vocal intensity when dealing with classroom discipline, usually in combination with lowering their pitch.
Background noise, organic or mechanical, is also shown to impact teacher voice use (Cutiva & Burdor, 2016; Smith et al., 1998) and all three teachers had some degree of background noise during classes. Vocalists may respond to a noisy environment by speaking too loudly – to be heard, to demand respect, or to ensure the status quo (McKinney, 2005, p. 175). Hackworth (2009) identified a difference in perception of the challenge in speaking over noisy classrooms. In her study, she found preservice teachers felt speaking over noisy classrooms less stressful than early career or late career teachers did. This is likely due to experience in the field: experienced teachers may have become accustomed to doing this. Nolteriek (1984) noted that elementary music teachers are more likely to respond vocally to students when working with large groups and that elementary music teachers tend to teach more often in large group situations than in small.

Newsome and Trudell also spent a great deal of time vocally active in their classroom – singing (alone, with students, over instruments), cueing students, calling directions, and in discipline. Of the three teachers, Newsome was the most vocally active. Given she was not vocally trained and did not consider herself a vocal professional, the degree of her vocal activity is thought provoking.

Newsome described her voice as a tool and it was a tool she frequently employed. Newsome estimated she had six vocally active hours a day. The day I observed, she was vocally active most of the time. Apart from her in-cafeteria portion of lunch duty, her duty before school, and her own lunch time, Newsome most of her interactions with others were vocal. During observation, Newsome did not use the piano or any other melodic instruments, did not provide pitch from any instrument other than her voice, and
did not cue class procedure by any method other than voice. Additionally, Newsome often vocalized over students as they spoke, sang, or played instruments, a pattern of instruction commonly viewed as vocally stressful by experienced teachers (Hackworth, 2009; Nolteriek, 1984).

Newsome’s teaching style resembled the vocal load as described in Smith et al.’s 1998 study. When describing vocal load, Newsome suggested much of the vocalizations teachers employ are rooted in personal choice and have an element of habit. This may be true; teacher habits are developed, to a certain extent, in response to demand and, as Kuchler (2012) suggested, “Teachers naturally engage in both healthy and unhealthy vocal behaviors, but they might choose healthy behaviors if they understood the consequences of the negative behaviors” (p. 52).

**Research Question 2a**

What perceptions do elementary music teachers have of their environment including the professional demands placed upon their voices?

**Professional Demands**

All three participants meet multiple classes each day and see a vast number of students. The teacher descriptions vary in demand placed upon their voices, though all three are certain their voices are how they deliver content to their students. Their voices are also how they organize and direct their classrooms, and how they interact with both students and adults throughout the work day.

When asked about their environment, all three teachers clearly addressed choice-making. Larken specified a consistent choice to use his voice in moderation, saying, “I let
my voice rest in between classes... And then I also utilize silence. I do some simple sign
language, so I don’t have to speak every direction. I also try to maintain a fairly quiet
level of voice whenever possible.”

Newsome connected an aspect of her career’s vocal demand with personality and
habit, saying, “Before I was an elementary music teacher, I was a band director. I’m used
to speaking loud and I think that’s just carried on with me through my elementary career.
…You have some teachers who are just very soft-spoken… and you have other teachers
like myself who they are naturally loud and so, I think it depends upon the personality.”
Larken made a similar comment when Moore asked him about the difference between his
speaking and his singing voice. “Your speaking- you’re naturally soft spoken anyway,”
said Larken. This was a description for Moore regarding the soft and less powerful nature
of his falsetto. While Moore did not speak with a rich and robust tone, the strength of
resonance can represent increased power and breath intensity. Just as a soft spoken talker
may have a pronounced difference in their singing voice’s intensity, so may a fully
resonant speaker have a soft, timid sounding singing voice if they do not understand how
to control the physiology to sustain sound.

Teachers have been shown to demonstrate an increase in vocal intensity as the
day progresses (Hunter & Titze, 2010), a result of increased muscular tension in the
throat. This was observable in Newsome’s ongoing vocalization during the work day. Her
room was acoustically noisy, generating a loud situation in which to work, which has
been identified as placing teachers at risk for symptoms of vocal damage (Van Houtte et
al., 2011). Newsome’s description of “naturally loud,” when combined with her
background of band instruction, brings up a possible distinction between “natural” and
“habitual,” both while working with a band and while working in an acoustically noisy and reverberant room.

Trudell equated the vocal demand of her careers with personal responsibility, too, saying, “I’m in charge of me. …It’s not necessarily the situation, it’s how I handle the situation.” Larken also indicated personal responsibility, describing his choice of “gentle” and “quiet” voice as one of his greatest vocal protections. None of the teachers specified the use of loud or intensified voices as an aspect of their own voice use, often citing the opposite. They each connected the louder, “Teacher Voice” with coaches and teaching PE. In fact, all three teachers independently mentioned PE teachers as having and using “Teacher Voice.” PE teacher’s voices were described this as “loud,” “big,” or the “coaching” voice. “If anyone is going to get kids to settle down,” said Trudell, “It’s the coaches with their big voice.”

All three participants combined classes for program preparation during PE. Larken and Newsome said PE and Music were called upon for crowd control during assemblies and other mass student groupings, citing that PE and Music saw and had a rapport with all students. Larken joked, “You should really be talking with them.” Though Trudell said she did not work with crowd control, she did comment,

I’m not going to do it. I’m not going to yell and scream over the kids [cleared throat] so they don’t ask me! But usually the coaches… they have that louder voice, that “coaching voice,” so they usually do it. (Interview)

Given the number of similarities between Music and PE classes, it is notable that all three Music teachers reported PE as using “Teacher Voice” while also denying they do the same.
When asked to describe her voice at the end of the work week, Newsome took a bit of time to respond. At the end of the work week, it is... Well, it depends,” she said.

It depends upon the severity of how— If I’ve strained my voice, if I’ve had to yell or anything like that… At the end of a work week, if I’ve had a good week, it sounds just as good as it did at the beginning of the work week. If I’ve had to yell, or anything else like that, by Friday, my voice is kind of raspy. (Interview)

Larken reported a different experience, saying,

I cannot really say… that it feels or sounds any different on Friday than it does on Monday, which I know is not true for all elementary music teachers. The only real difference is if I’ve got a sinus infection or if I’ve got- if my allergies have kicked in and I’ve got lots of gunk on my vocal cords, but other than that I really feel about as strong. (Interview)

The implication being he is aware of medical origins for impaired vocal function while being unaware of either any impaired function arising from occupational usage or impaired function arising from the combination of illness and the vocal demands of working while ill.

Acoustics

The field of acoustics deals with the properties of sound and sound transmission in a space (“acoustics,” n.d.). Research suggests the acoustics of a workspace may be reflected in vocal use (Assuncão et al., 2012; Cutiva & Burdorf, 2015; Cutiva & Burdorf, 2016) and the location of voice use may play a role in the development of poor vocal health (Paoliello, Oliveira, & Behlau, 2013; Sataloff, 2005). The nature of teaching music: modeling for instruction, demonstration of singing and playing techniques, creates environments with higher noise levels (Hackworth, 2013) and research has connected high decibel levels with increased risk for poor vocal health

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As specified in the literature review, I had not intended to include the field of acoustics in this study. Circumstances, however, brought this domain into relevance. As such, the literature is introduced at this point.
It is important to note Cantor Cutiva and colleagues (2013) demonstrated the importance of perception: teachers perceiving high levels of classroom noise consistently reported more voice disorders than teachers who did not perceive high levels of noise (Table 1).

In this study, Larken taught in a space originally designed to function as the school library. The room was quiet, absorbing a great deal of the noise within. The desk speakers used in his room were not strong enough to fill the space with sound in an intelligible way.

Newsome’s space was designed as an art room or science lab, and the space was highly reflective, generating an echo. While some noise was absorbed by children and their clothing (Acoustics, 2003), the zinging echo was present even when the room was occupied. Her desk speakers added to the sound reflections. Rather than boosting the power of a strong aural element, the speakers added to the volume of sound being reflected in the space, generating an atmosphere that had to be aurally, and orally, managed. Hackworth (2013) cautioned that the constraints of teaching space may increase vocal load.

The classroom acoustics resource guide states:

The most common problem plaguing cafeterias and gymnasiums is excessive reverberation time (RT), since they typically have both large physical volume and hard surface materials. In cafeterias, this long RT causes noise buildup, with students having to speak louder and louder to hear each other until there is a continuous roar. In gymnasiums, which are frequently used for pep rallies and assemblies, combining poor acoustics with a badly designed sound system produces speech that is nearly unintelligible and wreaks havoc on music. (Acoustical Society, 2000, p.8)

Voice complaints are linked with reported high noise levels in the workplace and reported poor classroom acoustics are associated with chronic complaints (Cutiva &
Burdorf, 2016). Trudell taught in the gym the day of her observation, and that space had a high degree of reverberation. Gymnasiums are known to be challenging, acoustically, due to flat surfaces and voluminous space (Classroom acoustics, 2003, p.8). At times, she offset this reverberation and build up of noise by using a microphone. Her use of amplification was not constant, however. While she was clear to specify she was silent in the cafeteria during her duty at Horseman, Trudell was willing to use her voice to be heard and understood in the reverberating gymnasium of Gardendale.

Gardendale’s gymnasium also had a noisy air system with two large air vents at the far end of the gym. These vents lead straight to the mechanical system outside and the duct work funneled the machinery sounds right into the teaching space. The resulting added noise muddled the voices and music being played and interfered in the singing of the students as the music suddenly became harder to hear, an aspect of classroom design which the acoustic guidebook warns against (Classroom acoustics, 2003, pp. 3, 4).

The Lombard Effect

All three participants increased their vocal intensity and volume to varying degrees while working with students after having reported their classroom work did not cause them to increase vocal intensity or volume. When asked if a noisy environment could lead to an instinctive increase in vocal intensity and volume, however, all three teachers answered, “Yes.” This supports the findings in Hackworth’s 2009 study, in which participants gave the highest vocal stress ratings to speaking over noisy classroom conditions. This instinctive intensification can represent the Lombard effect, an involuntary tendency to increase one’s vocal intensity in response to increased background noise (Sataloff, 1991).
On the VHI, all three teachers responded “never” or “almost never” to the statement regarding being heard in a noisy room, indicating these teachers believe they never or almost never have difficulty being heard in noisy spaces such as their classrooms or duty areas. All three responded the same way on the BQ, with no mention of classroom or duty as requiring “Teacher Voice.” The question which follows is: “How?” How do the teachers compensate for the noise, adjust to be heard, in their classes which are designed to teach sound?

Increased background noise came from air ducts, student numbers, student activities, class participation, telephone calls, and other impacting factors. While each of these are notable, the teachers did not seem to take notice of them either in the moment or in retrospect during the interview. Interestingly, Larken gave a story from a past teaching position which illustrated an increased vocal intensity on his part in coordination with a noisy air vent, but he did not name such vocal use in his current teaching post. None of the teachers did.

Are there guidelines to protect employees from noise? “No,” answered Newsome and Trudell. Larken thought differently. He equated “noise” with “hearing” but did not connect hearing with any subsequent change in vocalization.

Umm. I… I don’t think so. Nothing [vocally]. I mean, I assume if the noise is overly loud that there is certainly some sort of guideline along those lines. But band directors, and probably elementary music teachers, too, should have some sort of hearing assistance to save their – save our – hearing, but I think most people don’t worry too much about that - until they get older. (Interview)

The nature of the Lombard Effect, the involuntary increase in intensity and volume, means hearing is only a first level of defense against physical injury. Cantor Cutiva et al., (2013) indicated noise related factors could be consistently linked with
voice disorders and showed teachers who perceive high levels of noise in their classrooms reported more voice disorders than teachers who did not (Table 1).

Though Larken’s comment is focused upon hearing, the situation at hand is awareness. Forrest (2015) described the obscure, internal nature of the voice and its care, saying, “Like water to the proverbial fish, the teacher’s actual sounding voice is so integral to teaching that she takes it for granted unless, that is, something goes amiss…” (p. 589). The voice is so subtle and yet such a strong part of what teachers must do, we often do not pay attention until it is gone.

Ware (1998) cautions, “When damage occurs slowly, over a longer period of time, awareness of the disorder may be delayed” (p. 196). If teachers do not pay attention to their hearing until they get older, and hearing is more commonly discussed as requiring protection, then the voice and poor vocal health may slip by without awareness. Doscher gave a similar warning, saying:

It cannot be too strongly stated that vocal abuse, particularly the muscular imbalance resulting from the use of excessive force, does not always produce immediately discernible vocal problems or organic disorders. It may be months or even years before the damage caused by continual abusive habits is evidenced in a pathology such as vocal nodes. Unfortunately, this kind of cumulative damage often is irreversible; the vocal instrument has been injured permanently. (1994, p. 217)

“Professional” Performance

The teachers each commented upon performing away from the school as being more “professional” than teaching. This may be a result of studio culture, a strong component of many university fine arts departments. Larken mentioned his church choir and how he warms up for that work. Newsome commented that vocalists who “take their profession very seriously” might change jobs if they saw their performances declining in
quality. This comment was made about “professional” performances. Newsome specifically said teachers would not leave teaching due to poor vocal health. She said teachers who performed might leave teaching if their outside performances were impacted by poor vocal health. This may represent a significant distinction. Trudell mentioned that she used her voice more at school than when she was hired to sing yet warmed up more for one hour’s worth of work off campus than the five daily hours of activity she describes at her schools. All three teachers also described their voices as the primary tool for performing their work and expressed frustration when they could not use their voices as they needed.

Though none of the participants suggested teaching is not professional work, they do seem to imply teaching is less professional than singing off campus, and that suggests a degree of cognitive disconnect. Teaching is vastly important for a great many reasons and is also culturally undervalued. Though the teachers are living the complexity of teaching elementary music, they may also be responding to a deeply ingrained cultural bias. Newsome, making a joke as we discussed seeking medical attention, said, “[When people] find out I teach [elementary] music, they tell me to [go] set down and play!” I took this to indicate people assumed Newsome spent more time “playing” games with the students than performing the “work” of teaching. This conceptual bias is familiar to my own experiences at an elementary and middle school teacher as well as the described experiences I heard during my years as a mentor to, and mentor coordinator for, elementary music teachers. When all three teachers describe the work they do in school as less professional than singing off campus, an undercutting of the value of what they do, they may be reacting according to socialized bias.
There is another interpretation possible. The participants may be connecting the concepts of “professionalism” and artistic rigor. Certainly, most music departments challenge students, performance majors as well as education majors, to achieve a high level of artistic achievement. If teachers view artistic rigor as challenging and children’s repertoire as not artistically challenging, they may overlook the additive effects of frequency of voice use. As mentioned previously, research has demonstrated that teaching is vocally challenging, and teachers encounter greater vocal challenges than non-teachers. Likewise, research illustrates that music teachers encounter greater vocal demands than homeroom teachers. Performance rigor is significant for educational voicing. The participants seem to express a belief that the rigor of vocal performance when concertizing is more demanding than the rigor of daily classroom teaching.

When singing, vocalists are required to use a greater range than when speaking (Nix, 2018). Demanding vocal repertoire often requires a range larger than one octave, sometimes encompassing two or more octaves (Nix, 2018). The degree which vowels are elongated is also increased due to sustain as well as longer rhythmic values (Nix, 2018). When speaking, the sustained phonation of vowels may take a split second to complete. In song repertoire, however, vowels may commonly be sustained for ten to twenty seconds or more (Nix, 2018). This is not considering many other factors of a professional grade of song material: rhythmic complexity, a diverse dynamic range, specific articulations as required, foreign language diction, etc. (Nix, 2018). Each of these things is found in professional song. All these concepts may also be found within elementary music instruction, though they will look different due to the different repertoire and expected student ability.
While this rigor is more demanding than most folk song or children’s repertoire, it would be a mistake to overlook the cumulative duration of day to day repetition when teaching. This cumulative effect is compounded when one begins looking at the compounding components of discipline, class directions, the individual vocalizations between teacher and students, other teachers, intercom connection with the office, and vocal engagement with other duties. While the range and duration of sustain may require more endurance for professional repertoire, the cumulative effect of repletion for music teachers seems well evidenced and yet, by the participants, largely overlooked.

Newsome tiptoed into the concept of professionalism once more when she described her comfort in teaching her students to sing. “I feel very confident teaching my students to sing at the elementary level,” she said. “At this stage in the kids’ lives it is more about exploring music and understanding music rather than mastering it.” She went on to describe what she knew about singing. “I feel the foundations are the same for both singers and wind players. Proper breathing techniques, knowing when the sound needs to go up and knowing when it needs to go down, reading rhythms...things like that.” Newsome’s descriptions are general and vague. She went on, “I make sure they don't strain at the neck trying to get that last little breath out. And I tell them to pretend like they are about to dive under water at the pool when they take their breath.”

Newsome concluded her description of knowing how to teach people to sing without ever mentioning the vocal system, the vocal folds, resonance, or anything other than breath. She went on, saying,

Now, with that said, I would not feel comfortable teaching choir to any kiddo in the sixth grade and up. This is simply because I feel this is where they start to really focus in on embouchure, diction, and producing a first division of sound by
blending and balancing the group as a whole. (personal email correspondence, 2018)

The choral sound Newsome described is a unified sound, requiring singers to generate accurate pitch, good resonance, rhythmically precise diction, and tunefully blending their voices. A following question may be: when will students learn the basics of singing before they need them at the middle school level (blending, diction, intonation, etc) if these skills are not addressed at the elementary level.

Newsome was offered a job directing a middle school choir. She turned it down, telling the caller, “I would not want to do a disservice to the kids because of my lack of training in voice.” This comment suggests Newsome may recognize an area in which she has some weakness, and this weakness might make it inappropriate for her to teach singing at an upper level.

**Ranges**

I observed both Newsome and Trudell using male demonstration recordings for their children. In Newsome’s school, the children struggled to sing with the man’s voice, unable to establish a decent vocal registration. Trudell’s students struggled as well, but it sounded as though more students could hit the notes, especially in the older grades. Doscher (1994, p. 196) suggests the idea of range is unreliable, as does Vennard (1967), but there is some value in establishing a basic guideline for comparison in this circumstance.

It is simple to compare ranges and see a possible explanation as to why Newsome and Trudell experienced some difficulty when singing with a male demonstration voice. Vennard (1967) suggests most women are mezzo sopranos (p. 277). If we then consider Newsome and Trudell to be mezzo sopranos, their comfortable range would have been
within E3-A5. The Baritone voice with which they would have been attempting to sing would have been within the area of G2-G4. To compensate, Trudell opened her chest resonance and took on a large physical expansiveness, imitating the low, rich sound. Though Trudell only sang along with the male demonstrations twice, she handled the challenge identically both times.

Table 4

Comparison of Adult Singing Ranges

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<tbody>
<tr>
<td>Soprano</td>
<td>D4-G5</td>
<td>G3-D6</td>
<td>B3-B5</td>
</tr>
<tr>
<td>Mezzo Soprano</td>
<td></td>
<td>G3-A5</td>
<td>G3-G5</td>
</tr>
<tr>
<td>Alto</td>
<td>A3-C5</td>
<td>D3-E5</td>
<td>E3-E5</td>
</tr>
<tr>
<td>Tenor</td>
<td>E3-Gflat4</td>
<td>C3-G5</td>
<td>B2-B4</td>
</tr>
<tr>
<td>Baritone</td>
<td></td>
<td>G2-G4</td>
<td>G2-G4</td>
</tr>
<tr>
<td>Bass</td>
<td>A2-D4</td>
<td>E2–E4</td>
<td>E2-E4</td>
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</tbody>
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When Newsome sang along with the male demonstrations, she tucked her chin, slipped into vocal fry, and actively challenged the children to participate in singing.

When describing her comfort in teaching students to sing, she addressed breath, relaxation of breath pressure, and relaxation of posture when breathing: “Proper breathing techniques… I make sure they don't strain at the neck trying to get that last little breath out.” She did not address melodic or range concepts, tension, or avoiding vocal strain.

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4 Davids and LaTour (2012) did not offer a range description for either mezzo soprano or baritone.
Newsome’s comments suggested these were topics which could be left to middle school, first saying, “At this stage in the kids' lives it is more about exploring music and understanding music rather than mastering it” and later adding, “This [sixth grade and up] is where they start to really focus in on embouchure, diction, and producing a first division of sound by blending and balancing the group as a whole.” She also turned down a middle school position, saying, “I would not want to do a disservice to the kids because of my lack of training in voice.”

Newsome’s comments seem to suggest she has an awareness, on some level, that something is happening when she and her students sing and it is something she knows is present and active, but does not know how to address it. Something she can perceive but does not know what it is, something with embouchure, something with sounds that can be balanced. She also seems to suggest she knows there is a level of risk involved, though she does not specify if it is physical, mental, or opportunity based. “… Sometimes the captain of that boat (the teacher) causes a major shipwreck and all on board (the students) are left stranded.” As many children do not engage in music after elementary school, the consequences of how children learn to use their voices are as real as the opportunities they receive, or are denied, in music education itself.

There are structural differences between male and female voices, such as the male’s longer vocal folds, biochemical variances, and resulting differing fundamental frequencies in vocalization (Assuncão et al., 2012; Ferreira et al., 2010; and Fischer & Scott, 2014; Roy et al., 2004; Szymanowski et al., 2004). These differences are even larger when comparing adult male ranges with those of childhood singers, the circumstance as the children attempted to sing with the male demonstration recordings.
Riddle (2013) suggested the following ranges as comfortable for the differing ages of elementary children:

- Kinder (4.5-6 years) D4-B4
- 1st Grade (6-8 years) C4-B4
- 2nd Grade (7-9 years) C4-C5
- 3rd Grade (8-10 years) B3-D5
- 4th Grade (9-11 years) A3-E5
- 5th Grade (10-12 years) A3-F5

The differences between the ranges are significant and neither Trudell nor Newsome addressed the challenges faced by students as they attempted to sing with the male voice. The students in Newsome’s room attempted to match pitch. Some chose to sing up the octave, several droned, and most eventually stopped singing until the next song. The kinder “Itsy Bitsy Spider,” sung by a baritone, was the largest observed range-challenge as those kindergarteners, potentially possess the narrowest comfortable singing range, were singing to an adult male voice model. Conceivably, children with a singing range of D4-B4 were attempting to sing along with a baritone voice pitched somewhere between G2-G4.

Gardendale had one section of sixth grade which came for rehearsal of the sing-a-long music, and those ranges are considered different due to the developmental ages of the children. Rentz (2006) suggests the following successful middle school ranges:

- Soprano C4-F5
- Alto B-flat3–C5
- Tenor I A3-A4
• Tenor II F3-F4
• Baritone B flat2 –C4

While there are still significant differences, it is easy to see why some of these older boys (B flat 2-F4) would be able to better sing tunefully with the baritone demonstration voice (G2-G4).

At Cougar Elementary, Larken spoke in a gentle, masculine chest registration but demonstrated singing with falsetto, which he described as allowing his students to more easily match pitch. I quietly sang along with two classes, finding his falsetto led me to sound easily in my head mixed resonances (my combination of chest and head resonance), with less pressure upon my vocal folds. As I am a mezzo soprano and, considering the elementary age of the class, I estimated his pitch choices to range between F4-F5.

“I assumed that would take a toll on my voice, but it really seems to be the opposite,” Larken commented, describing his choice to demonstrate in falsetto. “It seems to not stress my vocal cords as much as singing in full voice does.” His description suggests he may feel his usage of falsetto preserved his voice. Comparison of adult and child ranges suggests his use of falsetto may preserve his student’s voices as well.

Modeling

Larken used his falsetto to model for his students. Trudell spoke of using a “childlike voice,” a lighter use of the mechanism. Newsome did not address her modeling in our conversations other than to say she did so through song, and seemed to give consideration only to if students vocally responded, not how her students vocally responded. She also suggested breath was of primary importance in singing instruction,
but breath is only one part of the vocal system. This is a case of practicalities in music education, of how to model voice use.

Trollinger and Sataloff (2017) have written regarding vocal modeling for children. It is of primary importance to realize music teachers are at the front lines of modeling healthful voice use for children. They also point out “both instrumental and vocal music majors are licensed to teach general music in the elementary and secondary schools regardless of vocal training experience” (Trollinger & Sataloff, 2017, p. 35). Instrumental majors who teach general music, while more likely to experience vocal challenges, are less likely to be aware of these challenges until they have been pointed out to them and that this may have consequences for the vocal health of students in their classes (2017, p. 35). Larken, who was an instrumentalist and also vocally trained, was conscious of his voice use and careful to both protect his voice as well as to model well for his students. Newsome, who came from a band background, seemed to illustrate this: she was experiencing poor vocal health but seemed unaware of the complications of her vocal challenges. She also seemed unaware of the nature of her student’s vocal challenges in class: pitch matching, registration issues, and how to sing when the modeling was out of their comfortable singing range.

Trollinger and Sataloff note female teachers may be vocally well suited to model for children as their vocal range is more comparable than a male’s (2017, p. 37). Female teachers may, however, select repertoire which is comfortable for themselves but not their students. Both Newsome and Trudell encountered this: singing songs quite easily and challenging students to sing along when the children were visibly and audibly struggling with the range.
Finally, Trollinger and Sataloff address the adult male vocal model, observing that children who imitate adult male singers often end up singing out of tune and with a pressed phonation from forcing their vocal mechanisms to sing out of range (2017, p. 37). They suggest adult male vocal models who use falsetto may experience success given the range similarity for children’s voices. Another important aspect of pitch matching is timbre. Falsetto and the lighter mechanism used by females in head resonance, each sung with no vibrato, may result in what Trollinger and Sataloff call a “childlike voice” (2017, p. 37), and a successful means of modeling for students. They caution, however, that until all music educators are trained more carefully in vocal pedagogy, vocal misuse and abuse in the classroom will persist for students and teachers (Trollinger & Sataloff, 2017, p. 42).

**Physical Health**

A perceived differentiation between voice use in the classroom and physical health arose for all three teachers. Trudell commented:

> It’s usually okay [at the end of the work week]. Unless there is an illness or something, I’m – right now I’m ill, so – I’m coughing, and I have congestion. That’s from having a cold. *That’s not from singing* [emphasis added]. So, usually... My voice is not sore. When I first started teaching, oh, it was pretty bad – real, real bad, because I was not used to... You know, I did all the work, everything... I didn’t have any voice [at the end of the week]. (Interview)

One complication for studying the vocal health of vocal professionals is the layering of physical health with occupational usage (Doherty & van Mersbergen, 2017). If a teacher is hoarse from sinus drainage or coughing, and comes to work anyway, then the damage may be compounded by the vocalizations required as part of the job. Bernstorf and Burk (1996) found a similar result, indicating illness or allergies can contribute to the development or perpetuations of vocal problems.
Music teachers may encounter vocal challenges because the situations surrounding their work may seem to encourage overuse or misuse of the vocal mechanism. Newsome seemed to identify some aspect of this. She described vocal challenges as arising from her health, not work, saying,

My voice is hoarse just because, you know, with my allergies and the drainage I’ve had. I start off the morning great and the more I talk (and it has nothing to do with yelling at the kiddos), but the more I use my voice, the more sore and inflamed [sic] it gets. (Interview)

Larken, Newsome, and Trudell were each aware of allergies and illness and their effect upon the vocal health, but illness compromises the body and vocal activity, especially for a high vocal load such a teaching. The element researchers have identified, but the teachers did not seem to have realized, was the risk of compounding vocal injury by working when the vocal mechanism has already been physically compromised. Research is growing, demonstrating that vocal health may impact a teacher’s ability to work (Åhlander et al., 2012; Hackworth, 2009; Van Houtte et al., 2011). The responses provided by the participants support these findings.

Newsome suggested, “I think it depends on the teacher. The lesson that I give is a good lesson but depending upon the teacher and what a teacher is expecting from that lesson, they could see it as diminishing the quality.” Trudell was much more direct. “Oh, yeah. Definitely. …When you can’t speak, you have to find another way.” Larken was just as adamant, saying,

Definitely, and I think it impacts music teachers more powerfully … just because that’s your primary mode of communication. And especially for music teachers: you want to model a song or give instructions… So, yeah. That’s a powerful impact. (Interview)
As a matter of fact, all three participants knew teachers who had experienced recurring poor vocal health. “A lot of teachers have that raspy voice, that poor vocal health,” said Trudell. “The majority of teachers that are of my age, or even a little younger, … its abuse. I think, PE – you know, the coaches – and the music teachers, abuse their voices quite a bit.” She independently chose the term abuse. Yet, the voice is supposed to be the tool teachers use to perform many crucial aspects of their trade.

The phrase itself captures the idea: teachers “perform,” regardless of the presence or absence of a stage. In the book, *The Musician’s Way*, Klickstein (2009) quotes Richard Norris, physician and flutist, “People take such wonderful care of their $40,000 violin or $10,000 flute – they need to take care of their bodies the same way” (p. 230). Trudell, as emphatic as she was regarding the protection of her voice, suggested the loss of voice was common for teachers as a group. “Every teacher,” she stressed, “*every single teacher* loses their voice once a year. *Every* single teacher. Not one teacher goes years without losing their voice.”

Larken, Newsome, and Trudell all said the voice is inherently a part of what they do. The voice is important to them, their teaching, their classrooms. Morrissey, in her dissertation, agreed, saying, “A loss of the voice— is much more than the loss of a communicative tool. For me, the loss— is devastating to my quality of life. My voice is who I am” (Morrissey, 2013, p. 153).

**Frustration**

When asked how it felt to work while experiencing vocal fatigue, all three teachers used the word “frustrating.” Newsome indicated she physically had to strive, to labor, saying,
It’s even more tiring [laughter] because you have to work harder to get the sounds that you want, or the kiddos won’t give you the sounds you’re asking for. [silence] And I would also say it’s frustrating, because I’m doing my best to lead by example, and yet I can’t do it sometimes. (Interview) Larken gave an eloquent description, saying,

It’s very frustrating, I think is the first adjective I would have to use, because you just can’t do what you want to do. It’s kind of like if you break your leg. You’re just used to walking and all of a sudden you can’t walk. Only this is your voice, which is a hundred times more important and useful than your leg. And so, it’s very frustrating. (Interview)

In his work with undergraduates, Vincent (2007) found that the lack of professional rigor might lead students to feel differently about the amount of vocalization required in the classroom, and that experienced teachers might feel frustration once they have experienced the vocal stress first hand. In fact, Hackworth (2009) found that most of all participants in her study: preservice, early career, and late career, believe voice problems affect a music teacher’s work.

Could that cause a teacher to leave the profession?

Uh… Yes,” responded Larken. “I would think so. If it’s a consistent, constant problem, because it is so frustrating, and it is such an important part of what we do. I mean, it’s really, I think, your number one tool, after your heart, is your ability to communicate. (Interview)

Newsome answered a bit more carefully.

I would think so, especially if – I teach elementary music, so we don’t do any of the UIL activities or I’m not involved in any of the choral clubs that are at a lot of the schools. I would say, me, no, but other vocalists who take their profession very seriously [emphasis added], if they can’t perform or they see their performance going downhill, I think they would change professions. (Interview)

Her response is of interest as she does not consider herself a vocal professional. In specifying “very seriously” and “not me, no,” it is inferable that Newsome feels teachers who either do not view themselves as vocal professionals or who do not view vocal health as important may not feel their teaching careers could impacted by poor vocal
health. Performing careers may be impacted, but not teaching careers. Likewise, those teachers may not recognize poor vocal health could compromise their ability to do their work. This supports Hackworth’s 2009 findings, in which she notes that a majority of teachers, when asked if they would consider a career change if they developed vocal problems, responded “no.”

**Research Question 2b**

What perceptions do elementary music teachers have of acceptable levels of vocal health?

All three teachers reported currently having “no problem” vocally on the SVHI and two of the three teachers described their voice situation as “normal” on the VHI. While all three described rigorous demands for vocal use as part of being a Music teacher, none reported needing to increase their vocal intensity or volume due to those demands. Larken responded to 70% of the VHI and 44.4% of the SVHI statements as “never” having such experiences. Trudell responded to 86.6% of the VHI and 75% of the SVHI as “never,” and Newsome responded to 93.3% of the VHI and 97.2% of the SVHI statements as “never.” All three teachers’ scores for VHI and SVHI suggested they have no to mild vocal dysfunction. This is interesting as two of the three teachers were currently experiencing hoarseness and one teacher had rescheduled the interview due to a lost voice. It is important to note the VHI and SVHI are diagnostic tools and are tested instruments which are reliable.

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5 Newsome responded with “moderate.” Given her regular description of her voice as healthy, this may represent a lack of common definition more than a marking of a “less than healthy.”
There is a demonstrated gap between teachers who seek treatment for vocal challenges and those who may not (Roy et al., 2004; Szymanowski et al., 2004; Van Houtte et al., 2011) and the reasons for this vary. Teachers may be concerned poor vocal health could reflect negatively upon their career or may not realize what they are experiencing is a problem.

There is another possible reason the three teachers in this study responded as uniformly as they did. Both quality of life surveys contained the word “handicap” and phrased statements in terms of “handicap” or with ownership terms such as “my dysfunction.” After completing the VHI and SVHI, each teacher contacted me, questioning their suitability for this study due to their overall vocal health. The teachers’ responses may not have reflected their descriptions of vocal use and experiences more closely as they do not identify as either handicapped or as possessing a dysfunction. The potentiality for compromised results due to participant avoidance of stigma will be covered in the VHI / SVHI section.

**Hoarseness**

Is a tired or hoarse voice a normal part of teaching? “Yes,” said Trudell. “The majority of the teachers I know have vocal nodules, have vocal abuse, you know? Have that raspy voice, are probably no longer singing professionally any more, like they used to because they just can’t.” Newsome connected this to her personality. “I think so,” she said. “Well, because, I mean, I… I teach six classes a day. I teach Kinder through 5th grade. And, so, you know, I use my voice all the time. The only time I don’t use my voice is in the instance of last Friday,” when she lost her voice.
Laken felt differently at first, but seemed to change his mind, saying, “Not for me, unless there is some sort of medical issue: allergies, sinus infection, something along those lines. And then, typically, I’ll lose my voice maybe once or twice throughout the school year. And I guess that would be considered hoarse or just really not functioning. I rarely get to the point where I can’t make a sound.” I asked him why that was, and he laughed. “Because I am super human! No… I don’t know. I have to say, the longer I teach, the less it seems to happen, which is kind of strange.”

I asked him about other teachers. “Yeah,” he said.

I think most teachers have a visit by the hoarseness bug every so often. And I hear teachers around campus here that get hoarse from time to time. It seems there is always someone hoarse. Now that doesn’t mean that teachers are always going hoarse, but I think it’s a fairly standard occupational hazard just because we are using our voices so much.

This supports the findings of Solberg and Duax (2000) and Van Houtte et al. (2011). Both studies suggest hoarseness is a common symptom for teachers and that inefficient vocal techniques, prolonged occupational vocal use, and vocal work in loud situations may place teachers at risk for symptoms. Hackworth (2009) suggests the teaching profession has a high risk for voice disorders and that the number of teachers with disorders may increase with classroom experience.

**Required**

When Trudell developed nodules early in her career, she sought outside help. She visited a specialist, an ear-nose-throat physician and a speech language pathologist, to help her recuperate and save her career. What her doctors asked her to do was not congruent with her duties as required by her administration.

At the beginning of my teaching I had nodules and, so I had to go to a voice professional… What she would do was train me on how to use my voice
properly. But I had to pay for that. It was a medical reason, in other words. …I had to get a note from the doctor that said I could only talk so many minutes during the day, stuff like that, and they almost put me on administrative leave, or whatever they call it. They almost put me on leave because they said, “You can’t do your job effectively if you don’t use your voice. You have to use your voice.” So, it was not a, it was not something that... you know. They didn’t like it, in other words. It was not acceptable. [clears throat] They didn’t understand about the vocal health stuff.

They don’t like it. What you need to do, they don’t appreciate it… That’s what the protocol is: I’m not supposed to be using my voice. I’m supposed to be quiet, you know? But that’s not going to happen. You need your voice at all times. (Interview)

Music teachers need their voices to be versatile, allowing them to handle the wide range of demands found in the music classroom. Trudell’s experience reflects Hackworth’s (2009) description of the demand for music teachers’ voices: “Music teachers are encouraged not only to use their voice for instruction and guidance; they are expected to model proper singing and playing techniques.” Her description does not go into the demands of schedule and student numbers, performances and rehearsals, but it does frame the beginnings for this reality. Music teachers are encouraged and expected to use their voices. Without education and understanding, this encouragement and expectation may result in a belief on the part of administration for teachers to use voices while ill, potentially complicating, and compounding, damage to the already compromised organ.

The other side of Trudell’s experience is her perception that her administration, campus and district, do not understand what is demanded of her vocally and what she needs as she balances her work and recuperation. Much like performers, schools and the needs of education do not stop when teachers become ill. The performance must go on, the students must be seen for class, the subject matter must be addressed. Educating
administrators, most of whom may have never given serious thought to their voice, let alone their vocal health, is vital. Medical professionals may be able to help with this. Explaining what was needed for healthy recovery was not enough for Trudell. She needed her employers to understand the importance of recuperation and how that would work for her as a professional voice user. Simply switching her job, while it solved the symptom, was not adequate for her needs – to continue in her profession while balancing her need for vocal health.

**Illness and Working**

All three teachers were adamant when proclaiming they had experienced illness and come to work anyway. “Oh, yes. All the time!” said Larken. “Well, I shouldn’t say all the time, but yes. That’s typical, I should think.” I asked why. “Because it’s what I do! [laughter] I just roll with it. But the ‘why,’ I guess, it’s just you have to.” Newsome answer was nearly identical. “Oh, yes. All the time. …Because it’s easier for me to go to work sick than it is for me to make lesson plans for a sub.” Trudell’s answer suggested her voice may be compromised more often than she was aware. “Uhm, mmm…” she thought. “I guess because I’m used to it. I don’t know. I’m not taking days off.” She went on, thoughtfully, to add, “I don’t take off because I already know that I’ll be alright. I don’t have to leave my place.” The concept of needing to be in the classroom, of rolling with it, of staying in place was strong. These comments support research which suggests recurring voice complaints may indicate many teachers with voice problems continue working regardless of illness.

Normally, the mechanics of the voice are largely unconscious, “until significant fatigue or serious injury occurs” (Melton & Tom, 2012, p. 20). Vocalists are not usually
aware of the complexity of speech production, or the difference between use of the vocal mechanism for speech versus use of the vocal mechanism for song.

As an aspect of a study on voice disorders, 20% of American monitored teachers reported missing between one day and one week of employment because they were vocally unhealthy. Inversely, this indicates 80% of Americans teachers would not – and this is in the group being studied. As with Smith et al.’s study of voice clinic participants (1998), in which the relevance of the issue was framed in absentia, difference between 16% for teachers and 12% for the next three groups (entertainers, sales agents, office workers), combined illustrates the significant proportion of teachers who experience voice problems and then seek treatment. This dearth of data reveals a glimpse of the potential size of the population who either do not take off work when vocally injured or who do take off work but ascribe the missed work to another reason.

Larken later defined when he might be willing to take a day off for poor vocal health. “If there is nothing pressing at school,” he said. “If it’s the week of your Thanksgiving program or your [school ensemble]’s got a performance… That kind of helps to make those kinds of decisions for you, too.” Perhaps being the lone teacher who can make these events happen plays into these health decisions.

Neither Larken nor Newsome had ever sought help for vocal problems. Trudell had, near the beginning of her career, and suggested it was not easy to arrange.

No. Uh-uhh. No, I had to get a doctor’s notice and I had to take it to HR and, oh, and she gave me a hard time that whole couple of years. ‘Cause it took me a couple of years to get rid of those nodules. So, she gave me a really hard time those couple of years. …Yeah. It was tough. [clears throat] But see, conflict makes you stronger! [laugher] You learn how to persevere. (Interview)
Of the three teachers, Trudell was the only one who had sought help for voice challenges. Newsome was the only teacher who had chosen to not report poor vocal health. “I was taught to modify and adapt for any circumstance,” she said. “I don’t have to report things like that.” This response suggests Newsome has been aware of an experience of poor vocal health and had planned around it, including deciding to not report her vocal condition. Given her 93.3% response rate of “never” experiencing the statements on the VHI and 97.2% response rate of “never” experiencing the statements on the SVHI, this seems to be a self-contradictory response.

In 2002, Yiu compiled data on the impact of voice problems and what these professionals, as consumers, were looking for in vocal health care. Three findings from Yiu’s study: (1) teachers may not be seeking treatment they need, (2) teachers may not believe their vocal symptoms are serious enough to warrant treatment, and (3) teachers may not have realized their symptoms are related to the voice they use when teaching. The opposite of these findings is referred to as the “healthy worker effect,” when late career employees may represent a condensed population with less vulnerability or more tolerance (Smith et al., 1998). In this situation people who are less susceptible to voice problems tend to stay in the profession and those who are prone to voice problems tend to leave. In these cases, the numbers for teachers who experience voice issues is skewed because the voices of those who have experienced a significant degree of vocal problems may have already left the career while the ones who have remained in the career are resilient and do not appear to be as affected by the health challenges at hand.
Medical Treatment

While all three teachers acknowledge a vocal injury can be a repetitive use injury, the responses were mixed regarding availability of treatment and if a doctor could help. Larken said a doctor could help, though vocal rest was best, and assumed treatment was available. Newsome said, “No,” to both treatment and physician help, but also suggested vocal rest. Trudell, having experienced both concepts first had, said treatment was available but that it would come from a “specialist.” In Yiu’s 2002 study, only 37% of the participant teachers had consulted laryngologists.

One of the most interesting portions of this interview process was regarding teacher’s primary care physicians (PCPs). I asked if their doctors knew they were teachers. Larken and Trudell said, “Yes.” When asked if their doctors considered them vocal professionals, both Larken and Trudell indicated they did not know, and Trudell took a moment to think on the question before answering. Newsome reported her doctor did not know she was a teacher.

When asked if their PCPs asked about their vocal health, the vocal quality of each reply was interesting. Larken reflected, answering, “Vocal health? No.” Newsome’s tone suggested this was thought provoking, and she answered, “No.” Trudell gave a long silence before succinctly replying, “Nope.” Larken and Trudell claim to be vocal professionals but they were not sure their PCPs knew this. More, none of the teachers’ PCPs asked about their vocal health, even though all three teachers consider their voices to be tools of the trade.

This suggests complicating factors. One participant did not think vocal problems could be medically treated, one thought treatment was possible but vocal rest was
appropriate, and none had been asked about vocal health by their PCPs. The teachers had varying subjective perceptions of levels of acceptable vocal health and its treatability.

Smith and colleagues (1998) suggested the population of teachers who do not seek treatment is potentially considerable and a low percentage, less than 40%, of teachers specifically connected the act of teaching to the development of voice problems. In the current study, all three teachers agreed voice use could affect teaching and all said they had changed how they taught, curbing their voice use due to vocal challenges, but none described their work as impacting their vocal health. This supports the findings which demonstrate 39% of teachers had restricted their vocal use in teaching because of voice problems but only 10% of the same population admitted voice problems had limited their ability to perform their job (Smith et al., 1998). Phrased differently: the teachers agree the professional tool of their voice is affected but this does not affect their ability to teach.

**Research Question 2c**

What perceptions do elementary music teachers have of the status of their voice as a professional tool?

All three participants considered their voices a tool of their profession. Trudell was concise: “I use it to sing, chant, and to deliver lessons.” Larken: It’s how I explain things to my students, it’s how I convey to them the importance of music. It’s how I sing and demonstrate concepts.” “I use my voice every day,” said Newsome, “Everything that my kiddos do, I model. I model through song… I use my voice all the time. I sing songs, do different routines in the classroom, I sing songs and the kids sing back to me…”
As previously stated, music teachers may be vocally active up to 90% of the teaching day (Solberg & Duax, 2000). The fundamental difference between speech and song is in duration of the phonatory state. Singing is extended vowel production, a quality of use different from speech, and singing may also represent a much wider and more expressive range of both pitch and dynamics. “Speech is not tied to specific tonal intervals,” reported Doscher (1994). “Speech is not sustained” (p. 163). Song may also require the singer to dedicate more time to phonation in an range of the voice which is not as commonly used. For example, a female teacher who speaks in chest resonance may sing soprano and spend the majority of her time singing above C5, or a male teacher who sings baritone may spend much classroom time singing in falsetto.

Spoken voiced intervals are rarely longer than three seconds in duration, given the constraints of articulation features such as voiced versus nonvoiced phonemes, and phonemes are the smallest unit of sound (Crannell, 2000, p. 392). In speech, expressive vowels may last three seconds. In song, however, a note may be held upwards of thirty seconds (Smith et al., 2017).

This study compared the work-rest cycle of singing with athleticism and found the voiced and non-voiced ratios were very different between music and non-music teachers – music teachers voiced longer than classroom teachers. The researchers also found the relationship of voiced and unvoiced phonemes resembled the patterns of work-rest ratios for athletes, suggesting an athletic approach to training might be in order. Finally, the researchers discovered music teachers have less recovery or nonvoiced time than classroom teachers. Vocally trained singers had been trained in how to elongate the
vowel sound and those teachers performed at a higher output, sustaining sounds over longer times and in larger groups.

**Discipline**

All three participants also described discipline as a use of their voice. On the BQ, Larken and Newsome both reported that discipline was the one situation which might require their “Teacher Voice.” All three teachers used their voices as they engaged in disciplinary tactics, one of the needs of flexible voice according to Åhlander and colleagues (2012). Trudell and Newsome lowered their voices, using chest resonance, as they did. Larken, already speaking in a lower registration, made no such change.

At Gardendale, a teaching assistant handled the few disciplinary situations which arose. Generally, she spoke stridently, increasing volume and intensity in her voice, calling the student to attention, then approached them and spoke with them in a more relaxed voice. Trudell spent most of her time engaged in the lesson, musical practice for the sing-a-long, and her disciplinary interactions usually consisted of keeping the combined classes on task and engaged. When this happened, she generally increased her volume and intensity, and accompanied her words with a gesture.

For example, during second grade, the students fumbled the words at the beginning of “Children, Go Where I Send Thee” and several stopped singing, turning to talk. Trudell stepped closer to the class, calling, “Y’all know this one!” over the music and giving a circular “come here” hand gesture, inviting participation. She sang the next few words of the song with the group and most children joined back in the singing. A few clusters of students, scattered in the center of the group, faced the projection of texts on the wall but tipped their heads closer together, quietly continuing to talk. Trudell
straightened her back and lowered her pitch, pointing her index finger at each group and, still over the music, saying, “I need to hear y’all.”

When describing her lunch duty at Horseman, Trudell specifically stated she would not yell at the students the students were “not used to” that. There is a stereotype that teachers yell at students as a means of discipline. A Google search of “teachers yell” yielded 8,550,000 results. There are studies on teachers and yelling, student responses to teachers who yell, and student responses to authoritarian discipline (Allen, 2010; Lewis, 2001; Trinkner, Cohn, Rebellon, & Van Gundy, 2011). There may be a deeper foundation represented here.

Horseman is a small campus of 352 students and a ratio of 15 students per teacher. The campus is 95% Hispanic, 4% African American, and 1% White, and 94% of the students are economically disadvantaged. Test scores are well below both state and district average and the campus has a history of challenges – community with faculty, faculty with administration, community with administration, and with student discipline. Originally constructed to be the school for black students in San Antonio, the campus has undergone revisions and renovations in attempts to better serve the needs of the community. Safety is a genuine concern in the residential area around the campus.

The demographics between Horseman and Gardendale are nearly identical. Why the difference, then between the two campuses? Administration is one possibility. The standards set by administration do influence school culture. Another possibility is the difference between the school culture and the culture of the children’s homes. If campus culture is significantly different than student’s home cultures, the groundwork may not yield an understanding between expectations on all three sides: student, teacher, and

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6 Personal web search, 18 June 2018.
parent (Gonzalez, Borders, Hines, Villalba, & Henderson, 2018). Culture not only dictates how authority is viewed, but how authority views and interacts with those not in power (Trinkner et al., 2011). Socioeconomic status may also be at play. While Gardendale’s area in also disadvantaged, the streets are considered more safe than Horseman’s. The challenges and biases involved in poverty may be reflected in the campus of the school, affecting both teaching and learning (Gibson & Barr, 2017).

Cultural standards in child rearing, discipline, and how adults use their voices to interact with children may also be involved. Trudell said the Horseman students were not used to being addressed with the spoken voice, implying the students are used to being yelled at. Having not observed on Horseman’s campus (Trudell actively scheduled me to visit Gardendale), I am unable to speak to the vocal culture of the school or of its climate. It is important to note that social differences, socioeconomic differences, and personality differences are relayed by voice. A teacher entering a campus climate may have a better chance of building a healthy classroom climate if they understand the culture(s) they will serve (Alemán, Freire, McKinney, & Bernal, 2017).

Back at Cougar Elementary, Larken usually spoke quietly with students as he coached them on expectations. At one point, when a young girl was silently crying over a reprimand in class, Larken pulled her aside and spoke gently with her. His volume was quiet enough that I could not hear what he said, even though he was within ten feet of me and the class was quietly awaiting their teacher’s arrival.

I only noted Larken employ increased volume and intensity as a disciplinary tactic three times. The first was when a first grader, granted permission to visit the restroom,
darted into the hall. Larken stopped teaching and called out, “Isaiah, if you are going to go to the bathroom, you’re going to use your walking feet.”

The other two examples were after school, during ensemble practice. After the group had brought out their assigned instruments, most students sat, excitedly talking with each other. Larken clapped a pattern, gaining their attention, and began describing the rehearsal plan. The talking quickly resumed, moving from whispers to audible speech. Larken spoke in a rhythmic pattern, with increased intensity and volume, and raised pitch: “If-you-can Hear. My. Voice. Please-say SHH.” The group rhythmically responded with “SHH!” He repeated this once, then resumed his usual voicing, reviewing a drumming pattern. Later, after the ensemble finished playing a piece, Larken addressed corrections with a section and a young man from a different group occupied himself by playing glissandos on his xylophone. Larken turned to him, gave him a direct and stern look, lowered his pitch and increased his intensity, firmly saying, “Stop.” The boy complied and Larken went back to teaching.

Speaking, singing, vocal modeling, and classroom management are knit throughout the entire teaching day for elementary Music teachers. It follows, then to ask about training for these requirements.

**Vocal Health Training**

Participants responses were identical regarding training for vocal health. None had had it. Though Larken had attended workshops at the Texas Music Educator Association convention, and Trudell had received medical treatment, none of the teachers, even the ones who studied voice as their primary instrument at the collegiate

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7 Student is referred to by pseudonym.
level, had been provided training in vocal health. This is a common gap in teacher preparation (Hackworth, 2009; Kuchler’s 2012, Smith et al., 1998; Smith et al., 2017; Szymanowski et al., 2004).

Only 27.8% of the teachers in Van Houtte and colleagues’ 2011 study reported having received information about vocal hygiene and vocal techniques. Of those, only 13.5% of the teachers did so during their teacher training, an aspect of teacher preparation which has for the most part been removed (Kuchler, 2012, p. 8). This ommittance may increase a probability for vocal disorders in teachers (Smith et al., 1998; Szymanowski et al., 2004).

A few education departments in the United States did once include vocal hygiene and general voice care, including the screening of voices. In Texas, there is no record of any district doing so at the time of this study. Though some school districts required physical health screenings prior to hiring, none of the districts I contacted in south central Texas screened teachers for vocal health.

All three teachers specified water intake as part of a care for a healthy voice. Research has found this to be a well-known and common strategy and, along with softer volume, is commonly accepted by many teachers (Hackworth, 2009; Yiu, 2002). The concept of the warm up, also well known by all three participants, was cited as important for voice care – with students. None made it a regular part of their professional practice. While the nature of physical preparation for physical activity is known, and many instructional guides suggest the importance of warming up and / or exercising the voice (Cooksey, 1992; Crannell, 2000; Davids & Latour, 2012; Doscher, 1994; Jahn, 2013; McKinney, 2005; Miller, 1910; Miller, 2004; Ware, 1998), caution should be had.
Warming up is itself a vocal activity. Smith et al. (2017), alerted that this increase of vocal does could contribute to vocal fatigue and, potentially, injury. As with many things, moderation is key, particularly when professional demand is high.

For a vocal professional, the voice is the primary tool of the trade. All three teachers mentioned some form of being taught to use their voice healthfully when performing in song or how to sing as a member of a choir. I asked the teachers if they had been taught to use their voices in a healthy way when teaching. The answer, again, was, “No.” Regarding training in how to care for the voice, what information they cited (water, vocal rest, not yelling), was gleaned from sources other than training or coursework.

Larken said,

Not specifically teaching… I guess I would have to say I’ve heard people recommend, “Well, try this or do this,” but I wouldn’t say in a formal way. I’ve had and have heard more ideas on that in terms of singing in an ensemble, singing in a choir of some sort. (Interview)

Trudell fell into thought again, saying, “Uh, no. Not training, per see, no. Not even in college!”

All three teachers agreed a voice injury could be a repetitive use injury, but what information the participants had was for the singing voice. None of the teachers had received information on how to care for the speaking voice when teaching, and none had ever been taught what to do if their voice became unhealthy or injured. Larken and Newsome again suggested vocal silence and Newsome added drinking water as a remedy. Trudell spoke of her medical treatment, suggesting this was a form of rehabilitative training. Bringing that back to work with her, as she mentioned previously, was problematic.
As with medical treatment and PCP awareness, all three teachers seemed to be making new connections as I asked about vocal training for health. If the voice is a tool, as the teachers have said it is, the idea of training for health, for what to do in case of injury, and instruction on how to use this professional tool seemed novel to each of them. The use of the voice to model, sing, instruct, and provide instruction, all aspects participants cited as imperative for teaching music, contribute to vocal load. Doherty and van Mersbergen (2017) identified that this quality of vocal load may be more than even the most highly developed technique to tolerate. Adding to this is the concept of training.

Larken and Trudell were trained as singers. Newsome was not. Moore, though having taken one course in singing, had not been taught how to care for or use the voice. None were trained in how to use the voice safely while teaching, and all used their voices to both speak and sing. The use of the spoken voice, however, may be more tasking upon the voice than singing (Douherty & van Mersbergen, 2017; Sataloff, 2017b), and the muscle adjustments used for singing are considerably different than those used for speech (Montgomery, 2018; Paoliello, Oliveira, & Behlau, 2013).

In The Singer’s Guide to Complete Health, Jahn comments:

I am constantly amazed how many professional singers pay no attention to their speaking voice. The way you speak is after all what you do with your vocal folds for most of the day. A badly produced speaking voice contributes to all manner of technical problems in a singer. (Jahn, 2013, p. 403).

Training for voice use, both for speech and song, would likely better prepare teachers for work in the classroom, especially as it is noted singers often do not carry the skills and vocal hygiene used in song over into their speaking voice use (Hackworth, 2009; Sataloff, 2017b). Montgomery (2018) suggests singers need a better awareness of the difference between the spoken and sung voice. Kuchler (2012) addressed this as well,
saying, “Vocal abuse occurs when teachers attempt to use ‘vocal postures’ that do not match their natural vocal abilities, without proper training. Teachers are not trained to use their voice and are not aware that the voice can be trained” (p. 17).

Teachers in music education, while perhaps having received some form of instruction in vocal use, may not have training or awareness sufficient to prepare them for the degree of voice use required in the classroom. Likewise, teachers in music education, while perhaps having instruction in the performance art of song, may not have had training or awareness sufficient to prepare them for the degree of combined voice use of speech and song which may define their days.

Progress in this area may be inhibited by a lack of communication. “… The fact that relevant and important information is scattered throughout a large number of different sources, often highly specialized, published by many different professional groups,” suggests Baken and Orlikoff (2000). “It is unreasonable to expect any working professional to winnow the haystack of literature looking for needles of methodologic utility” (p. 2). Facilitating communication between related groups is necessary and, though the range of information access is vast, allowing researchers and populations at risk to remain isolated from each other may have consequences which are no longer ethically responsible. Teachers, scientists, researchers, health professionals, and stakeholders in schools need to have access to related information, the ability to study vocal health and related issues within schools, and the means to communicate these issues, studies, and results with each other.
The VHI and SVHI

I chose to use the VHI and SVHI (Appendices B & C) because they are quality of life surveys, validated instruments which may provide a measure of the impact of voice disorders upon daily life (Cohen et al. 2007, Jacobson et al., 1997; Paoliello, Oliveira, & Behlau, 2013). As elementary music teachers regularly use both speech and song in their classrooms, I chose to use both instruments.

Activity limitation equates with impairment or disability. Restriction in participation equates with handicap, a term that has grown out of favor (“disability,” 2016; “handicap,” 1980; “impairment,” 2016; Yiu, 2002). The difference between impairment (limitation) and handicap (restriction) is fraught with stigma. When people do not want to be identified as being outside of the norm, they may be responding to what is called, “impairment-based stigma” (Bagenstos, 2000, p. 444). This can result in what is called, “label avoidance,” when a person may choose to not indicate a need or to not pursue treatment because they are distancing themselves from a classification which they may perceive as representing bias (Corrigan, 2014, p. 4).

I had considered the potential for label avoidance and received permission to remove the term “handicap”8 from one instrument but not both. To keep the responses more uniform, I left the term, along with all forms of ownership of disability, in both indices. The resulting responses were quite different from my pilot study, in which the terms had been removed. In the present study, participant responses were so commonly “never,” that the usefulness of these instruments was largely eliminated.

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8 As per Vincent’s 2007 study which utilized a similarly modified form of the VHI.
Literature reveals only 38% of teachers specifically connected the act of teaching to the development of voice problems (Smith et al., 1998). In the same study, 39% of teachers had restricted their vocal use in teaching because of voice problems but only 10% of the same population admitted voice problems had limited their ability to perform their job. This finding supported the results of a previous study (Smith et al., 1997, as cited by Smith et al., 1998). The thought processes which lead teachers to these descriptions may also lead teachers to avoid associating with the term “handicapped” and responding to prompts of “my voice problem.” A teacher who does not feel they have a voice problem might not provide an accurate response to a question worded, “my voice problem,” even if the teacher is experiencing vocal challenges.

Participants responded first to the BQ, then to the VHI, SVHI, and then to the interview. After completing the VHI and SVHI, each participant independently reached out and questioned their qualification to participate in the study, explaining they had a healthy voice, that they did not have vocal problems. If the participants do not identify as vocally handicapped, their responses may not accurately describe their normal feelings and events. Likewise, if the participants do not recognize their experiences as reflecting vocal illness or injury, they may not respond with a precise representation of their practices or understandings. The responses may be a result of label avoidance. Participants in this study, therefore, may have responded to the VHI and SVHI while experiencing one of the following situations:

- The teacher may not be experiencing a vocal problem.
- The teacher may be experiencing vocal symptoms but may not realize the symptoms represent a vocal problem.
• The teacher may be experiencing vocal symptoms but may not view the symptoms as problematic.

• The teacher may be experiencing vocal symptoms but may not realize the symptoms are treatable and have decided the symptoms are normal.

• The teacher may be experiencing vocal symptoms but may feel the symptoms connect to a classification which holds negative consequences (bias).

It is important to mention once again this case study involved only three participants. As such, the possibilities listed above are not generalizable to other populations. Further research is warranted in this area, however. Identifying characteristics of what Doherty and van Mersbergen described as “domain specific needs” (2017, Conclusions and future recommendations, para.1) could help establish better understandings of how teachers think of their voices.

Studies have demonstrated that teachers may exhibit symptoms of misuse and abuse regardless of whether the individual reports, or even perceives, symptoms (Åhlander et al., 2012). This suggests teachers who report themselves as vocally healthy either do not view symptoms as an issue or are unaware of a deficiency (Natour et al., 2015, p. 15; Metha et al., 2016). Teachers may also consider voice problems an unavoidable professional risk (Roy et al., 2004; Russell et al., 199, as cited in Van Houtte et al., 2011), or may simply be uninformed of vocal health and hygiene concepts (Kuchler, 2012). If teachers do perceive symptoms, they may be concerned poor vocal health could reflect negatively upon their career, they might not know support is available, or they might not realize the symptoms may be treatable (Roy et al., 2004, 1998; Sataloff, 1991; Smith et al., 1998; Szymanowski et al., 2004; Van Houtte et al.,
Any of these could prevent a teacher from connecting their voice with the terms “handicap” or “problem,” which could result in impairment-based stigma and label avoidance.

The VHI possible scores range from zero to 120 (Figure 2). Scores between zero and 33 are classified as no to mild experiences of disability (Jacobson et al., 1997). All three participants self-ratings were 10 or less, well below even a mild experience of disorder. This is due to participants consistently selecting the response of “never.” As the teachers noted experiencing lost voices extending into the weekend, the description of “never” does not match the interview results.

![Figure 2. Comparison of VHI scores](image)

Responses on the SVHI, the quality of life survey focused upon the experiences of singers, were equally skewed. The SVHI possible scores range from zero to 144 (Figure 3). Scores between zero and 36 are classified as no self-perceived handicap to a mildly
self-perceived handicap (Cohen et al., 2007). Newsome and Trudell again self-rated under 10, well below even a mild experience according to the index.

Larken, though still self-scoring as a “mild” experience did score himself as a 21. He shifted to a near equal distribution between “never” (16) and “almost never” (19) ratings on the SVHI. Larken was the most careful to regulate his voice usage. Though may be attributable to participant bias, Larken had a student teacher in the room and the student teacher did not provide any reaction suggesting Larken’s voice use was anything other than usual. Given Larken’s vocal caution, his change of response on the SVHI is interesting, demonstrating he may have begun responding with more accuracy. Trudell’s self-ratings also rose, though only by four points, due to allowing more “almost never” responses.

![Figure 3. Comparison of SVHI scores](image)

Larken and Trudell were both vocally trained. Larken’s second instrument was voice and Trudell’s primary instrument was voice. Doherty and van Mersbergen (2017)
identified teachers who reported voice as their primary instrument had the highest frequency of voice disorders. This is supported by Larken and Trudell’s rise in self-ratings as well as by Newsome, an instrumentalist, who consistently reported a mild to no perception of handicap. This resembles Vincent’s 2007 findings, which demonstrated an increase in perception of voice challenges by vocalists in comparison with instrumentalists. One potentially confounding aspect of Vincent’s results resonates: the population was made up of both singing students and non-professional singers. The non-professional singers may have given the perception of vocal handicap a lower value than would the professional singers.

In this study, Newsome, instrumentally trained, may have given the concept of vocal handicap less importance than Trudell and Larken. Likewise, all three teachers may have given the concept of vocal disability less importance as they all agreed performing away from campus was more professional than the singing they perform in school. As such, the responses on the VHI and SVHI remain suspect.

Newsome’s markings remained solidly in the “never” column. On the SVHI, she provided only one score which was not “never.” “My ability to sing varies day to day” was rated as “sometimes.” In the interview, Newsome described her work the day she had no voice, saying, “Like, Friday I went to school, and I could not talk at all. I modified my lessons, I had my students adapt to the way that we were doing our lessons that day. We were still able to get a lot accomplished.” This would represent a change in ability to sing but would also suggest possible rating changes for consistency (SVHI, item 26) or being unsure of what will come out (SVHI, item 31). On her VHI, Newsome had all “never” and two “sometimes” ratings. She isolated “people have difficulty understanding
me in a noisy room” and “my voice is worse in the evening” as being a situation she has sometimes experienced. Given her vocal challenges at the time of the study, it stands to reason she would indicate these. Her choice of “sometimes” rather than “almost never” is also of interest, given she does not identify as a vocal professional.

The VHI contained a second scale in which the participants selected from normal, mild, moderate, or severe. Larken and Trudell both circled “normal,” which corroborated their overall VHI scores of “no to mild disability.” Newsome chose “moderate,” though a definition was not provided. She may have indicated her hoarseness, as she was hoarse at the time, but this would conflict with her 93.3% self-rating of “never” experiencing the other symptoms on the VHI, ratings which suggested she felt she was in exceptional vocal health. As Newsome had rescheduled her interview due to loss of voice, this rating is contrary to her described experiences.

All three participants responded “never” to the question of “I try to change my voice to sound different.” All three teachers did adjust their voices. Larken utilized falsetto to sing closer in range to children’s voices. Newsome and Trudell both lowered their voices into chest resonance for discipline. The definition for “change” was not given, making these responses arbitrary, but they are still worthy of some examination.

**The Voice of Authority**

Speaking with low resonance can be culturally understood as to bear authority, to demand respect (Karpf, 2006, p. 45; McKinney, 2005, p. 175). In her 2015 philosophical paper on sonorous voice, Forrest muses,

Does the female-sounding voice face a distinctive challenge in getting students’ attention and respect? In attempting to establish a voice of authority in the classroom, does the female-sounding teacher try to speak in tones considered more authoritative? (Forrest, 2015, p.590)
If so, how many teachers lower pitch of voices for this reason?

Karpf suggests society may have taken the natural inflection provided by nature and established a preference for one voice over the other in regard to authority (2006, pp.156, 158). McKinney (2005) suggests intensity and depth of range may serve attempts by a speaker to dominate and control a situation (pp. 173, 175). Forrest (2015) suggests the adoption of these accepted tones of authority may at times be necessary (p. 596). She also suggests the female sounding voice of authority, the female sonorous voice, has been devalued and questions how to be authoritative without compromising vocal health (p. 593).

If female teachers question their authority in response to social bias against the female-sounding voice, then adaptation to fit the notion of authority may be unconsciously seen as necessary. Habitually speaking too far above or below optimum pitch level can result in voice problems (McKinney, 2005, p. 168). As such, any sound a woman makes in the classroom could put them in a compromised position: either as the authoritative center of their classroom, or as a healthful voice user.

**Revisiting Conjectures from Chapter 1**

In the initial proposal for this study, I pondered the connection teachers made between the circumstances of their profession with their occupational vocal use, questioning if this understanding could be clearly evidenced in both their expressed perceptions of their voice as well as in observable behavior. This study has demonstrated this to be valid. If teachers are not aware of the connection between what they choose to do, what they are required to do, and how these truths are evidenced in their voice, then
teachers cannot make concrete choices about their vocal health. If teachers cannot communicate these realities verbally, they cannot express what they need to each other, to their administration, or to medical professionals.

My second conjecture was regarding teachers considering themselves vocal professionals and the voice important tools of their classrooms. These teachers may demonstrate awareness the degree of vocal use which is required, of their concepts of what their voice is, how they use it, and how they feel about the way they professionally use their voices. Teachers used their voices three times more often than non-vocal professionals (Ferreira et al., 2010) and vocal load has been described as a major cause of voice dysfunction in education (Åhlander et al., 2012, Bernstorf & Burk, 1996; Hunter & Titze, 2010; Lyberg-Åhlander et al., 2015). All three participants suggested the voice was the main method of performing their work and the frustration of not being able to use the voice as they wished when they were ill. Vocal choices are a main aspect of the complicated tapestry of a vocal career.

Summary

This chapter delivered several findings obtained through this multi-case study. Findings were organized by research questions and theoretical framework. Data from interviews, observations, and questionnaires provided participants’ direct interpretations of their experiences and understandings of vocal health as a teacher. The strength of Qualitative Research is the use of participants’ own words. This chapter provides extensive use of quotations which build confidence in accurate representation of the people and situations under scrutiny.
It is important to recall a weakness of qualitative research is the potential for participant bias. The researcher both acted as participant observer as well as completing data analysis, there is potential for bias in the findings. Complicating this is the researcher’s previous position as an elementary music teacher, present position as a professor of music as well as a faculty member preparing students to be music teachers. To minimize the effect of this limitation, the researcher engaged in consistent critical analysis, reflecting on multiple possibilities for differing interpretations, through data collection, analysis, and synthesis. The resulting presentation is of what this researcher understands. Other readers may well create other connections. A strength of qualitative research is how personal experiences may be used to understand others’ experiences in specific situations.

The primary finding of this study is teachers do see themselves as vocal professionals, but vocal professionalism and caring for the voice’s professional use differ in definition and importance. This finding derives from the varied descriptions provided by participants as they described their perceptions of vocal health usage and the care they chose to apply as teachers. The complexities of vocal use while working in the elementary music field were described as demanding, vocal use was unanimously regarded as required to do their work, yet performances at outside venues were described as requiring more rigor and were regarded as more “professional” than teaching.

The second finding was that teachers seem more conscious of their physical health than other aspects of professional vocal demand. Professional demands placed upon teacher voices are rigorous, complicated by many factors, and potentially have both short and long-term consequences for teachers. All three teachers addressed personal
choices and personal responsibilities for how they acted and reacted to their teaching situation. While all three teachers said their classrooms did not require them to increase their vocal intensity or volume, all three demonstrated the Lombard Effect in observation. Likewise, all three teachers experienced frustration when working with vocal fatigue, knew teachers who experienced recurring voice challenges, and thought poor vocal health could lead a teacher to change careers.

The third finding demonstrated that teachers describe themselves as vocal professionals while also engaging in behaviors which do not consistently support sustainable vocal health or hygiene, such as coming to work while ill or vocally impaired. All three teachers described themselves as vocal professionals, acknowledged poor vocal health may affect a teacher’s career, and described hoarseness as being a normal part of teaching. This is countered by their responses on the VHI and SVHI, in which two reported “never” and one “sometimes” experienced vocal dysfunction, and the responses on the BQ, for which all three reported experiencing vocal fatigue persisting over multiple days or into the weekend. All three teachers had come to work while vocally impaired, suggesting it was common, but only one had sought medical treatment for vocal dysfunction. In fact, none of the teachers had ever been asked by their physicians about vocal health.

The fourth finding was that teachers do view their voices as professional tools, citing speech, singing, vocal modeling, lesson delivery, and classroom management as the main uses of voice. Though two participants were trained as singers, none of the teachers had received training in the care of their voices, in what to do if their voice was injured, or in how to use their voices safely while teaching.
The fifth finding was that the teachers each reported mild to no self-assessment of voice handicap. Participants self-assessed 44% - 97% of responses as “never” experiencing the situations as described. This conflicts with the teacher’s description of vocal health, given that two were experiencing hoarseness at the time of the study and one had rescheduled her interview due to loss of voice. That the teachers did not describe themselves as experiencing handicap, disability, or voice problems may be a result of label avoidance.

I expected an overriding theme of vocal professionalism, but the emergent story was of the voice as a multipurpose tool of the teaching profession and supporting complex relationships elementary music teachers have between vocal use and the profession of teaching. The voice functions as equipment that allows teachers to achieve various goals at any given time and, as with any tool, the use of this equipment contributes to the teachers’ experiences. For describing their voices as tools, and relating as vocal professionals, there were multiple instances in which observed practice and described perception did not meet.

These diverse answers illuminate several realities for individuals within the teaching profession as well as those who train, hire, supervise, and provide medical care for them. Teachers should be aware of the degree of vocal use which is required of them, what this will look and feel like in practice, and how to use the voice sustainably for the duration of a healthy career. The voice is the main method of delivery for instruction as well as many other parts of the job, such as discipline, coordination, professional communication, modeling, interaction, and emotional support. If a teacher does not realize the complexity of their voice as a key aspect of their profession, that teacher may
not understand the professional tool of their professional voice may require a professional degree of care.

Progressing forward, Chapter Six will draw conclusions and make recommendations both for further study and actions within the field of elementary music education and other related disciplines.
Chapter VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this multiple case study was to explore teacher perceptions of the voice and their use of it within the workplace. This chapter begins with a summative review of the purpose and findings followed by the conclusions which have arisen from this research. The chapter closes with recommendations for the field and for future research, and a final reflection upon this study.

Summary

The purpose of this study was to investigate how teachers describe their vocal practices and how they understand the complexities of their voice as an occupational tool. Specifically, descriptions of teachers’ thoughts and feelings, the perceptions of voice use in the workplace, were the accounts sought. Results of interviews and observation provided first hand experiences, clarifying perspectives and practices in the field of music education. These results have value in furthering an understanding how teachers feel about their vocal health and to enriching thought as to how to communicate with teachers about the importance occupational vocal health can play in the health of their careers.

The findings are as follows:

1. Teachers do see themselves as vocal professionals, but vocal professionalism and caring for the voice’s professional use differ in definition and importance.
2. Teachers seem more conscious of their physical health than other aspects of professional vocal demand.

3. Teachers describe themselves as vocal professionals while also engaging in behaviors which do not consistently support sustainable vocal health or hygiene, such as coming to work while ill.

4. Teachers do view their voices as professional tools, citing speech, singing, vocal modeling, lesson delivery, and classroom management as the main uses of voice, none of the participants had received training in how to use the voice safely, what to do if injured, or how to proactively care for the professional use their voices while teaching.

5. The teachers each reported mild to no self-assessment of voice handicap and did not describe themselves as experiencing handicap, disability, or voice problems though two teachers were experiencing hoarseness during the observation and one had needed to reschedule our interview due to loss of voice.

Conclusions

1. If teacher experiences are widely diverse, then finding the traits which are comparable will allow commonalities to be addressed in meaningful ways. Therefore, continued qualitative research may be the path which paves the way to meaningful quantitative research and further understanding of the complex needs of this population. This deduction can be seen to be networked in the remaining responses and conclusions of this study.

2. If the field of teaching music is both vocally demanding and complicated by individual experiences, perceptions, and expectations, then the field of these
individual experiences, perceptions, and expectations requires careful examination. This is especially true for confounding situations such as the potential teaching / performing dichotomy. Therefore, increased attention is indicated for the populations who professionally use their voices in both speech and song.

3. If there are aspects of teaching which are unique to the field of music education: the vocal demand, the lack of control over student numbers and schedule, and the layering of extra duties which cannot be distributed among several members of a teaching team, then the circumstances unique to music education may create conditions unique to the physical demands of vocalizing in this career. Therefore, there is an inferable potential for physical and psychological effects upon teachers and the way they play out in vocal health over time.

4. If teachers do not have the means to healthfully approach the vocal demands of a career in music education, then teachers may develop habitual practices which are not conducive to a career of healthy voice use. Therefore, teachers may, unawares, be causing themselves cumulative injury.

5. If teachers acknowledge the vocally challenging requirements in the field of music education, including a perceived need to come to work when ill or vocally injured, and if this need results in frustration as well as potentially creating a cumulative injury, then the possibility that these may be representative across the field of teaching is significant. Therefore, the potential physical and psychological consequences of the perceived vocal challenges inherent to the field of music
education may relate to the psychological health as well as physical health of these teachers.

**Implications and Recommendations**

Currently, this is the only study of self-described elementary music teacher perceptions of the use of voice in the workplace. I hope, by completing this study, to help expand and deepen insights into the complicated experiences these teachers face, especially when it comes to voice use, as this population equally uses spoken and sung voice.

Our voices are integral to who we are and what we do, and yet they are often overlooked in importance until they are damaged. I found that teachers, even teachers who have been vocally trained, often give their singing voice more care than their speaking voice, likely due to the collegiate focus upon performance preparation. I also found that teachers’ work is complicated, nuanced, highly individualized, and multi-layered. In this scenario, voice care seems overlooked in favor of the more immediate and urgent demands upon teachers’ time. As such, teachers’ experiences, as well as those of their families at home and the students in their care, are impacted by the vocal choices teachers make. In this study, all three teachers have families and they each mentioned the importance of interacting with them, vocal interactions, at home. A pebble dropped into the pond of teacher vocal health may send ripples far out into schools and communities…and I only looked at three cases. When looking at the scope of all the teachers in one school, one district, or one city, the potential for the effects of poor or overlooked vocal health choices may spread far and wide.
The implications and recommendations that follow are based upon the results of this study and are aimed at teachers, stakeholders, administrators, and medical professionals.

**Implications for the Field**

The voice can be viewed as a tool. Tools are used, or are required to be used, to perform work. Defining voice use and professionalism in a narrower way could be helpful for vocal professionals, allowing them to ask for help before the voice is compromised and to speak of their needs in clear and useful ways.

**Programs of study**

- Schools of music
  - Vocalists may have a better grasp of professional use of the voice if they are not only taught how to sing, but how to speak – specifically how to use the voice when teaching. This may include increased awareness of the rigor of professional music instruction – the use of speech and song over hours, days, weeks, and months which add into semesters and years.
  - Instrumentalists may have a better grasp of voice use if, during their vocal experiences, they do more than learn a song, they also learn to use the voice in a healthy way when performing a song and why it’s important, such as in vowel adjustment and the increased duration of vowels in song. Also, as vocalists, instrumentalists should know how to care for voice use when teaching.
• Teacher preparation programs
  o If students receive instruction in how to use the voice healthfully in the classroom prior to student teaching, students may develop healthy habits of voice use earlier in their career, preventing early vocal damage.

• The National Association of Schools of Music
  o NASM requires accredited programs to teach students healthy instrument use (including voice), but the terminology is framed loosely and often is interpreted as sung voice for stage performance, which may result in a continuation of the “professional” performances thought of voice use.
  o Acknowledging that students in music departments may plan to teach, it would be reasonable to have students learn that “professional” work extends to teaching in the classroom. Concretely defining singing in demonstration for students as professional work, work worthy of vocal care, may be an important next step.

Sharing of expertise / data between fields

• The research, including publication and venues of discussion, are contained within a different circle than many of the people this information could help. Creating a forum in which researchers, doctors, and speech language pathologists communicate with teachers, administrators, school districts, teacher unions, and other stakeholders may be helpful.
  o Science and health can communicate with education and school teachers via access points such as unions, publications read by teachers,
professional organizations (such as state music teacher associations), and health communications which are targeted at this population.

- Generating a common vocabulary for describing the voice, symptoms, and common voice problems can assist different parties in different groups to communicate with each other.

Practitioners

- Primary care physicians (PCPs)
  - Even if not treating the voice, PCPs may often be the front line of defense for many teachers regarding any physical ailment. If PCPs ask teachers about vocal health, alert teachers to symptoms of compromised vocal health, or notice poor vocal health then refer them to specialists, PCPs can serve to help teachers receive what they need to protect their voices and to become aware that their voice requires careful care.
  - PCPs could ask about the patient with known medial conditions which relate to voice challenges (acid reflux, allergies, chronic upper respiratory infections, recurring vocal fatigue) and then follow up on possible cases of compromised vocal health.

- Specialists
  - Teachers who seek medical treatment may need to communicate their health needs with their campus administration, district administration, and human resources departments. Knowing how to communicate health requirements and what his needed for recuperation will help teachers
recover while maintaining a good standing with their campus and district leadership.

- School districts
  - There is a need to create arenas in which teachers may be asked some of the more challenging questions which I removed from my study to facilitate permission to research. There are areas of teacher beliefs, understandings, and constructs for which probing would be useful.
  - As with other campaigns for safety, the health system needs the ability to track this situation. At the current time, there is no centralized method for researchers to begin to frame the scope of this issue or to provide data on solution effectiveness for the powers that be. This includes school district substitute systems as well as the Workman’s Compensation program.

- School districts & unions
  - Public health initiatives ensure teachers are prepared and aware of caring for wrists (carpal tunnel), backs (careful lifting), and general safety (caution on ladders, use of protective eye gear, safety equipment, etc.). Training to protect the voice could be modeled after these established programs.
  - Gatekeepers and stakeholders need evidence of the situational realities and potential pervasiveness of poor teacher vocal health and, in the future, evidence of the efficacy of intervention and preventative efforts.
Data collection is warranted on school health policy, school employee health benefits, teacher health requirements, and how these interplay with teacher vocal health.

**Recommendations for Further Research**

- This study yielded no clear conclusion in two areas:
  - Teacher perceptions of the difference between the voice as used to speak verses the voice as used to sing.
  - Of teaching and performing – what makes concertizing more “professional performance” that the classrooms?

- Results which were not in the scope of this study, but which deserve research:
  - Teacher preparation (instrumental vs. vocal) and teacher awareness of student vocalization (on pitch, resonance area used, appropriate range, healthful intensities).
  - Students singing with demonstration voices in challenging or unmatchable ranges.
  - The intersection of biopsychosocial intersection and symptoms with subject bias and label avoidance and symptoms.
  - Sociocultural aspects of voice use and teacher preparation for working with the cultures represented in schools.
  - The intersection between resonant voicing and the perception of authority.

- Other populations
Research could also expand to other populations (i.e., instrumentally trained, physical education, music teachers who have come from other fields and/or professions, teacher assistants, classroom teachers at the primary and secondary levels, etc.).

Research may include interviewing school employees who are not teachers, individuals in positions of authority over teachers, teacher advocacy groups, and educational policy makers.

Other subject areas (Art, PE, Drama) teach multiple classes at a time, or work with large groups, have long and/or irregular schedules with extracurricular sessions and added duties and may also be called upon to speak as well as sing.

Future research may replicate this study or design studies with larger populations or differing foci which may yield more transferability (Yin, 2003) to other populations.

**Final Reflections**

The conclusion of this project represents a two-year long odyssey for me and signals the beginning of a transition in my life. As this journey rushes towards the next, I reflect upon what I’ve learned and experienced. I have seen the voice as a manifestation of culture, and culture is a nuanced and ever shifting reflection of society. We learn to use our voices – volume, inflection, intonation, stress, resonance – according to the situation in which we live and work. The voice communicates who we are, who we wish we were, and who we want to be.
I reflect upon my past as a mentor, as a coordinator of mentors to new teachers, and of my time partnering with student teachers. In a very real way, a teacher’s vocal health is career health. More than “setting a good example for the kids” or “health saves the district money,” teachers deserve good health because the career is inherently demanding. Teachers deserve good health because they are human. Humans should have good health without having to compromise or justify why they deserve it, regardless of who they are. Poor vocal health does not have to be an accepted aspect of teaching and saying the voice must be protected is not enough. There must be other paths, actions to be taken, education, change. Though I began this voyage thinking I would better myself for the university classroom, I have learned about my voice – physical, spiritual, professional. Now, rather than slowing my pace, I feel I may be pooling my energy. I may be preparing to launch into another direction. I may be preparing to explore a whole new professional voice: advocacy.
REFERENCES


# Appendix A

## Glossary of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>abuse</td>
<td>wrong use, especially excessive use, of anything, intentionally or unintentionally</td>
<td>(“abuse,” 2012)</td>
</tr>
<tr>
<td>acoustics</td>
<td>a science that deals with the production, control, transmission, reception, and effects of sound</td>
<td>(“acoustics,” n.d.)</td>
</tr>
<tr>
<td>acute</td>
<td>beginning abruptly, with a marked intensity or sharpness, then subsiding after a short period</td>
<td>(“acute,” 2009)</td>
</tr>
<tr>
<td>aphonya</td>
<td>a condition characterized by loss of the ability to produce normal speech sounds that results from overuse of the vocal cords, organic disease, or psychological causes, such as anxiety</td>
<td>(“aphonia,” 2009)</td>
</tr>
<tr>
<td>asymptomatic</td>
<td>showing no signs or symptoms of a disease or disorder</td>
<td>(“asymptomatic,” 2003)</td>
</tr>
<tr>
<td>biopsychosocial</td>
<td>pertaining to the complex of biological, psychological, and social aspects of life</td>
<td>(“biopsychosocial,” 2009)</td>
</tr>
<tr>
<td>breathiness</td>
<td>prevention of full approximation of the vocal folds, characterized by excessive loss of air during vocalization</td>
<td>(Benninger &amp; Murry, 2008b, p. 182; Sataloff, 1991, p. 5)</td>
</tr>
<tr>
<td>chest voice</td>
<td>the lower notes of a vocal range, sympathetic vibrations produced in the chest with the thicker vocal configuration required to produce those tones</td>
<td>(Benninger &amp; Murry, 20008b, p. 182)</td>
</tr>
<tr>
<td>chronic</td>
<td>persisting for a long period, often for the remainder of a person’s lifetime</td>
<td>(“chronic,” 2010)</td>
</tr>
<tr>
<td>classroom</td>
<td>a room, as in a school or college, in which classes are held</td>
<td>(“classroom,” 2010)</td>
</tr>
<tr>
<td>complaint</td>
<td>a disorder, disease, or symptom, or the description of it</td>
<td>(“complaint,” 2012)</td>
</tr>
<tr>
<td>damage</td>
<td>Harm, diminution, or destruction of an organ, body part, system, or function</td>
<td>(“damage,” 2012)</td>
</tr>
<tr>
<td>disability</td>
<td>disability is an umbrella term, covering impairments (a problem in body function or structure,) activity limitations (a difficulty encountered by an individual in executing a task or action,) and participation restrictions (a problem experienced by an individual in involvement in life situations)</td>
<td>(“disability,” 2016)</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
<td>Source(s)</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>discomfort</td>
<td>an absence of comfort or ease; hardship or mild pain</td>
<td>(“discomfort,” 2010)</td>
</tr>
<tr>
<td>disorder</td>
<td>a disturbance of function, structure, or both, resulting from a genetic or embryonic failure in development or from exogenous factors such as poison, trauma, or disease</td>
<td>(“disorder,” 2010)</td>
</tr>
<tr>
<td>dysfunction</td>
<td>disturbance, impairment, or abnormality of functioning of an organ</td>
<td>(“dysfunction,” 2003)</td>
</tr>
<tr>
<td>dysphonia</td>
<td>impaired voice or defective phonation resulting in poor voice quality</td>
<td>(Ware, 1998, p. 277; Benninger &amp; Murry, 2008b, p. 182)</td>
</tr>
<tr>
<td>edema</td>
<td>abnormal accumulation of fluid in the tissues; swelling (as of the vocal folds)</td>
<td>(Miller, 2004. p. 303)</td>
</tr>
<tr>
<td>education</td>
<td>the knowledge or skill obtained or developed by a learning process; a program of instruction of a specified kind or level</td>
<td>(“education,” 2011)</td>
</tr>
<tr>
<td>fatigue</td>
<td>the inability to continue to vocalize for extended periods without change in vocal quality; often rooted in misuses of abdominal and neck musculature or vocalizing to loudly or too long</td>
<td>(Sataloff, 2017c, pp.196-197)</td>
</tr>
<tr>
<td>fatigue signals</td>
<td>becoming hoarse, losing vocal range, change of timbre, breaking into different registers, or exhibiting other uncontrolled aberrations; may serve as a means of awareness of the state of one’s vocal health</td>
<td>(Sataloff, 1991, p. 5)</td>
</tr>
<tr>
<td>handicap</td>
<td>a social, economic, or environmental disadvantage resulting from an impairment or disability</td>
<td>(“handicap,” 1980)</td>
</tr>
<tr>
<td>health</td>
<td>a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity¹</td>
<td>(“health,” 1948)</td>
</tr>
<tr>
<td>hoarseness</td>
<td>a vocal quality that is heard as harshness with breathiness, a coarse or scratchy sound most often associated with abnormalities of the leading edge of the vocal folds such as laryngitis or mass lesions</td>
<td>(Benninger &amp; Murry, 2008b, p. 185; Sataloff, 1991, p. 5)</td>
</tr>
<tr>
<td>hygiene</td>
<td>the science of health and its preservation</td>
<td>(“hygiene,” 2007)</td>
</tr>
<tr>
<td>hyperfunction</td>
<td>excessive activity in any part of the physical mechanism with excessive use</td>
<td>(Miller, 2004, p. 252; Ware, 1998, p. 279)</td>
</tr>
<tr>
<td>hypofunction</td>
<td>insufficient activity in any part of the physical mechanism</td>
<td>(Miller, 2004, p. 252)</td>
</tr>
<tr>
<td>illness</td>
<td>an experience of poor health, an absence of normal sensations and functions without the presence of disease</td>
<td>(Boyd, 2000, p. 10)</td>
</tr>
<tr>
<td>impairment</td>
<td>physiological challenge resulting in activity limitation</td>
<td>(“impairment,” 2016)</td>
</tr>
<tr>
<td>injury</td>
<td>any process causing physical damage</td>
<td>(“injury,” 2008)</td>
</tr>
</tbody>
</table>

¹ Health, as a concept, is difficult to define. Boyd gives an excellent theoretical discussion of the nuances involved (Boyd, 2000, p. 12.)
| **intensity** | a measurement of the amplitude of a sound, the acoustic correlate of loudness | (Benninger & Murry, 2008b, p. 185) |
| **misuse** | the improper use of something, commonly a result of poor technique | (“misuse,” 2011) |
| **music** | an art of sound in time that expresses ideas and emotions in significant forms through the elements of rhythm, melody, harmony, and dynamics | (“music,” 2010) |
| **noise** | air pressure fluctuations detected by the ear and classified as unwanted sound | (Occupational Safety and Health Administration, n.d.) |
| **onset** | [vocal] sound initiation | (Davids & LaTour, 2012, p. 51) |
| **perception** | the conscious mental registration of a sensory stimulus | (“perception,” 2003) |
| **phonation** | voicing; sound produced by the vibrating vocal folds | (Miller, 2004, p. 254) |
| **phoneme** | the individual sound components of a word, the smallest unit of recognizable speech sound | (Crannell, 2000, p. 392) |
| **prevalence** | the total number of cases of a disease in a given population at a specific time | (“prevalence,” 2007) |
| **problem** | Any thing, matter, person, etc., that is difficult to deal with, solve, or overcome | (“problem,” 2014) |
| **projection** | the quality of vocal production that refers to the ability of the voice to travel through space and be heard | (Benninger & Murry, 2008b, p. 187) |
| **psychosocial** | involving both psychological and social aspects | (“psychosocial,” 2016) |
| **register** | consecutive series of tones of similar quality | (Miller, 2004, p. 254) |
| **resonance** | the amplification of certain components of the tone produced at the vocal folds along the vocal tract, this configuration is changed during speaking or singing | (Benninger & Murry, 2008b, p. 188) |
| **safe** | not causing harm or injury; having a low incidence of adverse reactions and significant side effects when adequate instructions for use are given and having a low potential for harm under conditions of widespread availability | (“safe,” 2012) |
| **singing** | the activity of performing songs or tunes by making musical sounds with the voice | (“singing,” 2018) |
| **speech** | the faculty or act of expressing or describing thoughts, feelings, or perceptions by the articulation of words | (“speech,” 2011) |
| **straight tone** | A tone without oscillation of pitch, created by preventing certain laryngeal muscles from engaging in the work-rest cycle | (Stark, 2008, p. 146) |
| **teacher** | one who educates | (“teacher,” 2010) |
| **throat** | the passage from the mouth to the pharynx | (“throat,” 2003) |
| **timbre** | the characteristic tone quality of a sound; the primary factor which enables you to distinguish between two instruments or voices performing the same pitch with the same intensity | (McKinney, 1994, p. 24) |
| **tool** | a device used to perform work, as something required to perform one’s work | (“tool,” 2011) |
| **use** | the applying of something to a specific desired purpose | (“use,” 2003) |
| **vibration** | air pressure fluctuations detected by the ear and classified as sound | (Occupational Safety and Health Administration, n.d.) |
| **vibrato** | Audible, regular oscillation of a single pitch, created by relaxation and contraction of laryngeal muscles | (Ware, 1998, p. 180) |
| **vocal** | pertaining to the voice or the organs of speech | (“vocal,” 2012) |
| **vocal dose** | The combined amount of voice use during an established time period | (Smith, et al., 2016) |
| **vocal loading** | the manner in which means and frequency of use place demands upon the vocal mechanism | (Vilman, 2004; as cited by Hunter & Titze, 2010) |
| **voice** | the sound produced in a person's larynx and uttered through the mouth, as speech or song | (“voice,” 2018) |
| **voice disorder** | the abnormal production and / or absences of vocal quality, pitch, loudness, resonance, and / or duration which is inappropriate for an individual’s age and / or sex | (ASHA, 1993, as cited in Cantor Cutiva, et al., 2013) |
| **volume disturbance** | an inability to vocalize loudly or an inability to vocalize softly | (Sataloff, 1991, p. 5) |
### Appendix B

**Voice Handicap Index**  
(Jacobson, et al., 1997; used with permission)  

Name ____________________________ Date ______________________________

Instructions: These are statements that many people have used to describe their voices and the effects of their voices on their lives. Mark the response that indicates how frequently you have the same experience.

(O = never, 1 = almost never, 2 = sometimes, 3 = almost always, 4 = always)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>Almost</th>
<th>Sometimes</th>
<th>Almost</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1. My voice makes it difficult for people to hear me.</td>
<td></td>
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<tr>
<td>P2. I run out of air when I talk.</td>
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<tr>
<td>F3. People have difficulty understanding me in a noisy room.</td>
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<tr>
<td>P4. The sound of my voice varies throughout the day.</td>
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<tr>
<td>F5. My family has difficulty hearing me when I call them throughout the house.</td>
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<tr>
<td>F6. I use the phone less often than I would like.</td>
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<tr>
<td>E7. I’m tense when talking with others because of my voice.</td>
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<tr>
<td>F8. I tend to avoid groups of people because of my voice.</td>
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<tr>
<td>E9. People seem irritated with my voice.</td>
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</tr>
<tr>
<td>P10. People ask, “What’s wrong with your voice?”</td>
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<tr>
<td>F11. I speak with friends, neighbors, or relatives less often because of my voice.</td>
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</tbody>
</table>

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<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>F12.</strong> People ask me to repeat myself when speaking face-to-face.</td>
<td></td>
</tr>
<tr>
<td><strong>P13.</strong> My voice sounds creaky and dry.</td>
<td></td>
</tr>
<tr>
<td><strong>P14.</strong> I feel as though I have to strain to produce voice.</td>
<td></td>
</tr>
<tr>
<td><strong>E15.</strong> I find other people don’t understand my voice problem.</td>
<td></td>
</tr>
<tr>
<td><strong>F16.</strong> My voice difficulties restrict my personal and social life.</td>
<td></td>
</tr>
<tr>
<td><strong>P17.</strong> The clarity of my voice is unpredictable.</td>
<td></td>
</tr>
<tr>
<td><strong>P18.</strong> I try to change my voice to sound different.</td>
<td></td>
</tr>
<tr>
<td><strong>F19.</strong> I feel left out of conversations because of my voice.</td>
<td></td>
</tr>
<tr>
<td><strong>P20.</strong> I use a great deal of effort to speak.</td>
<td></td>
</tr>
<tr>
<td><strong>P21.</strong> My voice is worse in the evening.</td>
<td></td>
</tr>
<tr>
<td><strong>F22.</strong> My voice problem causes me to lose income.</td>
<td></td>
</tr>
<tr>
<td><strong>E23.</strong> My voice problem upsets me.</td>
<td></td>
</tr>
<tr>
<td><strong>E24.</strong> I am less outgoing because of voice challenges.</td>
<td></td>
</tr>
<tr>
<td><strong>E25.</strong> My voice makes me feel handicapped.</td>
<td></td>
</tr>
<tr>
<td><strong>P26.</strong> My voice “gives out” on me in the middle of speaking.</td>
<td></td>
</tr>
<tr>
<td><strong>E27.</strong> I feel annoyed when people ask me to repeat.</td>
<td></td>
</tr>
<tr>
<td><strong>E28.</strong> I feel embarrassed when people ask me to repeat.</td>
<td></td>
</tr>
<tr>
<td><strong>E29.</strong> My voice makes me feel incompetent.</td>
<td></td>
</tr>
<tr>
<td><strong>E30.</strong> I’m ashamed of my voice problem.</td>
<td></td>
</tr>
</tbody>
</table>

Please circle the word that matches the severity of your voice disorder today.

<table>
<thead>
<tr>
<th>Normal</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
</table>

For tabulation purposes:

<table>
<thead>
<tr>
<th>F</th>
<th>P</th>
<th>E</th>
<th>Total</th>
</tr>
</thead>
</table>

| F | P | E | Total |

| F | P | E | Total |

| F | P | E | Total |
Appendix C

Singing Voice Handicap Index
(Cohen, et al. 2007; used with permission)\(^1\)

Name ___________________________ Date _______________________

Instructions: These are statements that many people have used to describe their singing and the effects of their singing on their lives. Mark the response that indicates how frequently you have had the same experience.

(O = never, 1 = almost never, 2 = sometimes, 3 = almost always, 4 = always)

<table>
<thead>
<tr>
<th><strong>Singing Voice</strong></th>
<th>Never</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Almost Always</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It takes a lot of effort to sing.</td>
<td></td>
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<tr>
<td>2. My voice cracks and breaks.</td>
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</tr>
<tr>
<td>3. I am frustrated by my singing.</td>
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</tr>
<tr>
<td>4. People ask “What is wrong with your voice?” when I sing.</td>
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</tr>
<tr>
<td>5. My ability to sing varies day to day.</td>
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</tr>
<tr>
<td>6. My voice “gives out” on me while I am singing.</td>
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</tr>
<tr>
<td>7. My singing voice upsets me.</td>
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<td></td>
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</tr>
<tr>
<td>8. My singing problems make me not want to sing / perform.</td>
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</tr>
<tr>
<td>9. I am embarrassed by my singing.</td>
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</tr>
<tr>
<td>10. I am unable to use my “high voice.”</td>
<td></td>
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</tr>
<tr>
<td>11. I get nervous before I sing because of my singing problems.</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>12. My speaking voice is not normal.</td>
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<td></td>
</tr>
<tr>
<td>13. My throat is dry when I sing.</td>
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</tr>
<tr>
<td>14. I’ve had to eliminate certain songs from my singing/performances.</td>
<td></td>
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</tr>
<tr>
<td>15. I have no confidence in my singing voice.</td>
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<td></td>
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</tbody>
</table>

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<p>| | | | | |</p>
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<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>16. My singing voice is never normal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I have trouble making my voice do what I want it to.</td>
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</tr>
<tr>
<td>18. I have to “push it” to produce my voice when singing.</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I have trouble controlling the breathiness in my voice.</td>
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</tr>
<tr>
<td>20. I have trouble controlling the raspiness in my voice.</td>
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<td></td>
</tr>
<tr>
<td>21. I have trouble singing loudly.</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>22. I have difficulty staying on pitch when I sing.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>23. I feel anxious about my singing.</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>24. My singing sounds forced.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. My speaking voice is hoarse after I sing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. My voice quality is inconsistent.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. My singing voice makes it difficult for the audience to hear me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. My singing makes me feel handicapped.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. My singing voice tires easily.</td>
<td></td>
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<tr>
<td>30. I feel pain, tickling, or choking when I sing.</td>
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<tr>
<td>31. I am unsure of what will come out when I sing.</td>
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<tr>
<td>32. I feel something is missing in my life because of my inability to sing.</td>
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<tr>
<td>33. I am worried my singing problems will cause me to lose opportunities.</td>
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<tr>
<td>34. I feel left out of the music scene because of my voice.</td>
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<tr>
<td>35. My signing makes me feel incompetent.</td>
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<tr>
<td>36. I have to cancel performances, singing engagements, rehearsals, or practices because of my singing.</td>
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</tbody>
</table>

Please circle the words that match how serious you feel your voice problem is:
No problem Mild Problem Moderate Problem Severe Problem

For tabulation purposes: Total ___________
Appendix D
Background Questionnaire

Participant _______________  Primary Instrument _____________  Date ____________

Classroom Conditions
1. Is / Does your classroom…

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.a. Dusty?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.b. Damp?</td>
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<td></td>
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<tr>
<td>1.c. Have good acoustics?</td>
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<td></td>
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<tr>
<td>1.d. Exposed to road noise?</td>
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<tr>
<td>1.e. Exposed to recess noise?</td>
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<tr>
<td>1.f. Exposed to cafeteria noise?</td>
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<tr>
<td>1.g. Exposed to gym noise?</td>
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<tr>
<td>1.h. Exposed to the noise of other grades changing classes?</td>
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<tr>
<td>1.i. Does your room echo?</td>
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<tr>
<td>1.j. Is the air dry?</td>
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<tr>
<td>1.k. Does your classroom experience large changes in temperature?</td>
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<tr>
<td>1.l. Do you have good ventilation?</td>
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<tr>
<td>1.m. Do you have good lighting?</td>
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</tbody>
</table>

Situational Demands
2. Do you professionally or recreationally sing outside of the classroom? (If so, where / how often?)
   __________________________________________________________________________________________
   __________________________________________________________________________________________

3. How many years have you taught music? ________________
4. Which grade levels have you taught? ________________
5. How many classes do you teach per week? ________________
6. How many students, on average, are in each class?
   __________________________________________________________________________________________
7. How many extracurricular ensembles do you have & how often / long are rehearsals?

_____________________________________________________________________

8. How many students are in each ensemble?

________________________________________________________________________

9. Do you ever teach combined classes in preparation for programs? If so, describe how you manage working with these groups.

_____________________________________________________________________

10. Do you regularly sing in a sitting position (such as from behind a piano or a drum)?

________________________________________________________________________

11. Do you have before or after school duties for which you increase the intensity or volume of your voice? If so, briefly describe what this situation is like.

_____________________________________________________________________

_____________________________________________________________________

12. Reflect on your daily classroom schedule. Are there particular moments which seem particularly suited to using your “teacher voice?” If so, briefly describe them.

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________
13. Vocal Load

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.a. Do you sing outside of a comfortable range when assisting or modeling for students?</td>
<td></td>
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<tr>
<td>13.b. Are you careful to use your voice safely in class?</td>
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<tr>
<td>13.c. Are you careful to use your voice safely in extracurricular rehearsals?</td>
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<tr>
<td>13.d. Are you careful to use your voice safely in before or after school duties?</td>
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<tr>
<td>13.e. Do you ever experience vocal fatigue that persists over multiple days or into the weekend?</td>
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</tbody>
</table>

14. Diet and health

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.a. Are you able to maintain a healthy diet while teaching?</td>
<td></td>
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</tr>
<tr>
<td>14.b. Are you able to maintain a healthy eating schedule while teaching?</td>
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<tr>
<td>14.c. Are you able to remain hydrated while teaching?</td>
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<tr>
<td>14.d. Do you drink caffeinated beverages on work days?</td>
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</table>

Technology

15. Do you have technology on your campus which helps you to protect your voice?

a. If so, what kind?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

b. Do you use it (circle one):
   - Every class When needed (Frequently / Infrequently) Never
   - Every rehearsal When needed (Frequently / Infrequently) Never
   - Every duty When needed (Frequently / Infrequently) Never

c. How did you get the technology?
   - Built into school
   - Campus or District provided
   - Parent organization
   - Fundraising Self-purchase
   - Other: ___________________
Do you have anything else you would like to add?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Thank you for your time!

When complete, please return to: Kimberly Stephenson

*scan and return via email to* kjsXXXX@tc.columbia.edu

*or (if in CITY NAME) phone, and I will come to the campus to collect your completed questionnaire. XXX-XXX-XXXX*
Appendix E

Interview Questions

Participant ___________________________  Date _________________________

Vocal Professional

- Do you consider yourself to be a professional voice user?
- Is your voice a tool of teaching? How?
- How do you take care of your voice?
  - a. Do you warm up your voice before you begin your duties? Why or why not?
- Describe your voice at the end of a work week.
- Is a tired voice or hoarseness a normal part of teaching? Why / why not?
- Is hoarseness common for all teachers? Why / why not?
- Did any of your professional training cover vocal health?
- Have you ever had training in what to do if your voice is unhealthy or injured?
- Have you ever had training in how to use your voice in a healthy way when teaching?

Vocal Load

- How many vocally active hours do you estimate you have each work day?
- If your campus holds a school-wide assembly, who organizes and / or controls the crowd?

Vocal dysfunction & effects

- Have you ever experienced illness and come to work in spite of discomfort? Why?
- Have you ever experienced a weak, tired, sore, or hoarse voice?
- Have you ever had recurring vocal challenges?
- Have you ever taken off work because of poor vocal health?
• Have you ever had a weak, tired, sore, or hoarse voice, and come to work anyway?
• Describe what it is like when working with vocal fatigue.
• Could having a weak, tired, sore, or hoarse voice impact a teacher’s ability to work?
• Could a teacher miss a professional opportunity due to poor vocal health?
• Could a teacher have a side activity or hobby affected by vocal health during the school year?
• Could poor vocal health lead a teacher to change careers?

Reporting
• If you thought your voice was affected by your work environment or duties, would you speak with someone about it? Who? Why?
• Have you ever officially reported vocal illness or injury?
• Have you ever chosen to NOT mention poor vocal health?
• Have you ever known another teacher who had recurring poor vocal health?

PCP / Vocal Professional
• Does your Primary Care Physician (PCP) know you are a music teacher?
• Does your PCP ask about your vocal health?
• Does your PCP consider you a vocal professional?

Seeking help
• Have you ever sought help for a vocal health problem?
• Do you feel a doctor could help with a weak, tired, sore, or hoarse voice?
• Is treatment available for a weak, tired, sore, or hoarse voices?
• Can vocal injury be a repetitive use injury?

Employee Protections
• Can a noisy environment lead to an instinctive increase in vocal intensity and volume?
• Are there guidelines to protect employees from exposure to noise?

Do you have anything you would like to add? Thank you for your time.
Appendix F

Participant Glossary

Terms we may use today

*health* – a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity

*hoarseness* – a vocal quality that is heard as harshness with breathiness, a coarse or scratchy sound most often associated with abnormalities of the leading edge of the vocal folds such as laryngitis or mass lesions

*illness* – an experience of poor health, an absence of normal sensations and functions without the presence of disease

*injury* – any process causing physical damage

*safe use* - protected from danger or risk of misuse or abuse