Voice Pedagogy for the 21st Century: The Summation of Two Summits

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> What should a responsible voice teacher be teaching in a scientific age? A fine teacher combines mechanistic information with the psychological and the aesthetic . . . We owe it to our students to be able to take advantage not only of everything that was known 200 years ago, but also of everything that is known today . . . [The] responsibility, excitement, and reward of our profession lie in rising to the challenges of new opportunities to make the present and future of voice even greater than the past.[1]
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> —Richard Miller

INTRODUCTION

The Voice Pedagogy Interest Group[2] held Summit II: The Sequel in May 2018 at The University of Southern California. Summit II continued the work of Summit I, held at The Ohio State University in 2015. Lynn Helding and Scott McCoy (co-chairs) and Ken Bozeman and Allen Henderson (co-organizers) invited fifty academic voice pedagogy teachers from across the United States and Canada to consider the question, "What skills are possessed by the ideal singing teacher?" A total of thirty-seven pedagogues attended the summit, representing thirty-five unique universities with programs in classical, musical theatre, and contemporary commercial music styles.

These meetings aimed to establish and recommend a logical curriculum that prepares and trains those entering the voice teaching profession with the knowledge and skills needed to succeed. In order to complete this task, it became necessary first to outline the knowledge base and skills voice teachers need to effectively teach singing. Other professions (e.g., medicine, law, public school teaching, accounting, veterinary medicine, cosmetology) have standardized basic knowledge and skill requirements based on the fundamental competencies required for one to obtain licensure to work in that profession.

However, the rapidly growing and evolving field of voice teaching has no past or current requirements for licensure or certification, thereby making it difficult to outline a practical curriculum to train teachers of singing. It is possible to open a voice studio and recruit students without substantial training, experience, or competence.

The Voice Pedagogy Interest Group provided the Writers Group[3] with over seventy carefully debated consensus statements from Summits I and II and charged them to comprehensively present these statements in a white paper that would serve as a reference for voice pedagogy instructors and academic curriculum development committees. This position paper codifies the expanding competencies necessary for a twenty-first century teacher of singing and fulfills the Voice Pedagogy Interest Group's primary purpose, which was to present a vision of the ideal singing teacher's education, experience, knowledge, and skill. Furthermore, while not the primary purpose of the summits or this paper, these recommendations might be useful to independent voice teachers, should they desire an accessible guide for self-study and continuing education.

Definitions

We recognize that many different terms, definitions, and course titles exist within the realm of voice teacher education. *Voice pedagogy* has been a term loosely and broadly applied to different aspects of voice teaching since the field emerged. *Pedagogy* (n.) is "the art, occupation, or practice of teaching."[4] Therefore, simply stated, *voice pedagogy* could be defined as the study of voice instruction. *Science* (n.) is the "study of the nature and behaviour of natural things and the knowledge that we obtain about them."[5] Therefore, *voice science* could be defined simply as the study of the voice instrument. While voice pedagogy might include the study of voice science and how it informs voice instruction, the two terms should not be conflated. A third term, *vocology,* co-invented by Dr. Ingo Titze and Dr. George Gates, encompasses the entire study of vocalization and unites both the science and practice of voice habilitation across multidisciplinary professions (e.g., singing voice habilitation, speech language pathology, speaking voice habilitation, laryngology).[6]

A variety of other terms focused on the integration of scientific and factual principles into voice teaching exist, including fact-based voice pedagogy[7] and science-informed or science-based voice instruction.[8] Some pedagogues have proposed that the chasm between science and practice can be bridged through application of the evidence-based medicine (EBM)[9] model to the field of singing and voice pedagogy.[10] The evidence-based voice pedagogy (EBVP) framework offers an inclusive approach that combines voice research, the student's goals and perspectives, and all of the various ways voice teachers gain expertise.[11]

Historical Context

The earliest writings on voice training have been attributed to Conrad von Zabern in his work, *De modo cantandi choralem cantum*, published in 1474; however, one source states that most discussions of early voice pedagogy began with Pier Francesco Tosi's *Opinioni de' cantori antichi, e moderni,* from 1723 (nearly 250 years later).[12] James Stark reminds us that very few master teachers during this time wrote out their approaches, which left the door open for teachers with less knowledge and skill to gain prominence as authorities on the subject.[13] While voice teaching primarily existed as an oral tradition before 1800, the scientific contributions of Manuel García II, Louis Mandl, and other nineteenth century experts inspired voice teachers to incorporate, discuss, and write about anatomic and physiologic voice principles in voice teaching.[14]

Pedagogues of the twentieth and twenty-first centuries have more actively engaged in writing about advances in voice pedagogy and voice science and have reiterated the importance of balancing both the science and the art of voice teaching. For example, voice pedagogue Richard Miller asserted that voice teachers should take advantage of legacy knowledge as well as everything known at the time. Miller said, "It is the responsibility of the singing teacher in a scientific age to interpret and expand voice traditions through the means of current analysis so that the viable aspects of tradition can be communicated in a systematic way."[15] Robert Sataloff, laryngologist and voice scientist, recognized that all clinicians must practice art and science in combination when assessing the singing voice, prioritizing neither "dispassionate scientific analysis" nor an intuition-only approach.[16]

In an effort to build on this past and generous work, we include a brief overview of historical attempts to out-

line and formalize the knowledge base, skills, and education required in voice teaching. Past attempts to establish standards in voice teaching were generally motivated by efforts to: (a) continue to improve the quality of voice teachers; (b) ensure a basic level of knowledge across all voice teachers; (c) continue growth and establishment of the profession; (d) provide leverage to voice teachers in legal and taxation matters; (e) establish certification and/or licensure of voice teachers; and (f) protect the public's voice health and financial interests.

Several pedagogues and organizations of singing teachers have sought to create standards and systematize the education of voice teachers, arguing that evidence-based models and consensus-based scientific principles must be employed by researchers, teachers, and clinicians, and therefore included in the training of singing teachers.[17] The National Association of Teachers of Singing (NATS), the largest singing teacher organization with over 7,500 members, has advocated standards and education for voice teachers since its establishment in 1944 through its primary publication, the *Journal of Singing* (1995–present), formerly named *The Bulletin* (1944–1965), *The NATS Bulletin* (1966–1985), and *The NATS Journal* (1985–1995).[18] Prior to the founding of this organization, John Wilcox, who would become the first president of NATS, published a paper, "What a Voice Teacher Must Know."[19] In this 1918 paper, Wilcox emphasized that teachers should have a deep understanding of efficient breathing, vocal tone, muscular freedom, resonance, diction, and repertoire, and more importantly, be able to apply this knowledge within the voice studio. He discussed the lack of systematic education for voice teachers and pleaded for the establishment of training schools.[20]

Decades later, NATS published the article, "Systematic Teacher Training is Lacking," by Ruth Douglass.[21] In this 1947 article, Douglass bemoaned the lack of rigorous preparation required for singing teachers, despite the fact that voice teachers deal with the well-being of the human body.[22] Thereafter, NATS established the Committee on Basic Fundamental Requirements for Teachers of Singing, which released its first article in the February-March 1948 edition of *The Bulletin*.[23] The article divided requirements for singing teachers into two sections. Part 1 listed coursework recommendations for universities and schools, including (1)

grounding in musical fundamentals, (2) anatomy and physiology of the vocal tract, (3) physics and acoustics of musical sound, (4) psychology for voice teachers, (5) declamation and oral interpretation, (6) terminology, (7) vocal methodology and pedagogy, (8) vocal repertory, (9) ethics of the vocal profession, (10) history of the vocal art, (11) vocal training, including diction, (12) advanced general musicianship, (13) vocal clinic, and (14) practice teaching under expert guidance. Part 2 recommended courses of study for each of the NATS district educational extension programs that offered continuing education for teachers of singing. The committee, later renamed the Advisory Committee on Vocal Education (ACOVE), further detailed these courses in a supplementary report in the September-October 1948 edition of *The Bulletin*.[24]

In the final issue of the 1948 bulletin, the president of NATS at that time, Richard DeYoung, stated that two colleges had adopted the program in teacher training (suggested by ACOVE) and would issue degrees in Vocal Pedagogy.[25] ACOVE continued and published a third article that included a proposed curriculum for bachelor and master degrees for teachers of singing. ACOVE mailed this suggested coursework to 1200 colleges, universities, and schools of music.[26]

NATS established the American Institute of Vocal Pedagogy (AIVP) in 1959. The program, renamed the Fellowship Program in NATS (FNATS), invited singing teachers with or without degrees to become a Fellow in NATS or an Associate in NATS (a mid-point step toward full certification and fellowship) through courses, reading lists, and fourteen required examinations. NATS discontinued this program in 1968 due to the program's lack of applicants and financial stability. By this point, NATS had positively shaped the curriculum of many colleges and universities that offered master's and doctoral degrees in voice and/or voice pedagogy, and the Music Teachers National Association had begun to offer a certification program option for private voice teachers without degrees. However, Berton Coffin, NATS president from 1968–1970, commented, "unless other schools have come up with Vocal Pedagogy in their DMA programs, we may, in a way, be back where we were when AIVP was brought into being."[27]

The American Academy of Teachers of Singing (AATS), a group of forty internally nominated and

selected voice teachers, published a paper, "Qualifications for Teachers of Singing," in 1975 (revised in 1997). The paper stated that a teacher must help students develop their full voice production, gain artistic use of the voice, and possess full understanding and knowledge of the function of the voice apparatus in speech and in singing. The paper concluded by listing eleven skills that a voice teacher needed in order to effectively teach singing.[28]

The singing voice teaching profession has continued to evolve dramatically over the past ten to twenty years. We acknowledge that other attempts to codify the knowledge base and skills necessary for voice teaching may exist. Nonetheless, we note that a systematic approach in the education and training of voice teachers has yet to be universal or required, a source of frustration to those individuals who aim to strengthen the scientific side of voice teaching and a nuisance to those who believe strongly in the efficacy of their own time tested and established methodologies. The Voice Pedagogy Interest Group aims to build on these important historical perspectives and existing models as we outline a comprehensive framework of voice teaching and detail the expanding competencies necessary for a twenty-first century teacher of singing based upon the conclusions reached by the Voice Pedagogy Interest Group at their summits.

Tenets and Principles

The following tenets and principles should serve as a guide and lens through which one reads this paper.

1. Voice teachers come into the profession through many related fields (e.g., professional singing, public school music education, speech-language pathology, voice coaching). While no two singing teachers have the same experiences and background, they nevertheless should have a common basic knowledge and skill set in order to teach singing.
2. Voice teaching occurs in many different settings and encompasses a wide range of voice teaching professionals (e.g., choral music educators, independent and academic voice studio teachers, singing voice specialists). Again, regardless of the setting in which voice teaching may occur, all persons teaching voice should have a common basic knowledge and skill set.
3. The singing community has been engaged in a deep and spirited conversation about the proper role

of voice science in singing voice pedagogy since Manuel Garcia II published his observations on the anatomy and physiology of the singing voice in 1855.[29] However, the art of teaching and singing and the science of voice production can co-exist. The twenty-first century teacher of singing should be able successfully to integrate current scientific advances related to voice pedagogy, knowledge of historical voice pedagogy and traditions, and the art of voice teaching successfully into an interconnected and informed model of voice teaching.

4. Voice teachers deal with the health and well-being of the human body and the voice instrument housed within the body, which can be permanently damaged if misused or overused. Therefore, any knowledge that could help teachers promote and preserve the health of the human voice and body should be acquired.
5. There are ineffective practitioners in every profession, including those with educational standards, certification, and licensure. Nevertheless, these guidelines are a first step toward establishing a basic foundation of knowledge and skills across all voice teachers.
6. While the framework, knowledge base, and skills detailed below represent the ideal voice teacher, we recognize that a person with equivalent expertise in all of these areas does not exist; rather, we hope that this portrait of an ideal voice teacher can contribute to the establishment of basic fundamental knowledge and skill requirements in each area, inform voice pedagogy curricula in the years to come, and guide our efforts as lifelong learners.

Style and Genre. Over the past 100 years, the music industry has continued to expand and currently includes a wide variety of genres that require a singer to perform voice styles and coordinations that differ from Western classical and operatic singing. Just as a one size fits all instructional approach will not work for every voice student, a one size fits all technical approach will not work for all genres and voice styles. Over the past fifteen years, there has been an important increase in research and writing that examines commercial voice styles. Guided by those findings, the Writers Group has included the following tenets and principles related to style and genre.

1. One voice style or music genre is not inherently better or more worthy of study than another voice style or music genre.

2. While some voice styles, genres, or roles may require greater voice load and demands, any singer utilizing any voice style or performing in any genre may face the risk of vocal fold pathology.

3. Students do not necessarily need a background in classical singing in order to efficiently sing other voice styles. While they may need to be able to produce specific coordinations found in classical singing styles, they can gain those skills through vocalises and/or repertoire within the genre they prefer.

4. Teachers may specialize in a particular style or genre given their background, experience, and the interests of the students they primarily teach; however, we encourage all singing teachers to expand their knowledge, skills, and experience in teaching various styles and genres, as they all require variations in pedagogic approach.

5. While promoting a deeper understanding and education of the voice coordinations required of different voice styles and genres, a teacher should be cautious when working with students on music from genres unfamiliar to the teacher in terms of style, technical skills required to meet professsional expectations in that genre, repertoire, and professional expectations and requirements. Teachers should refer students to other professionals as needed.

COMPREHENSIVE VOICE PEDAGOGY FRAMEWORK (CVPF) AND MODEL[30]

Background and Purpose

The first task of the Writers Group was to organize the consensus statements into a categorized, contextualized presentation. Through discussions with the Voice Pedagogy Interest Group project leaders, the Writers Group found it necessary to develop a framework (related to existing frameworks and models in educational psychology) that would more fully encompass the scope and spirit of the consensus statements. The Writers Group proposes the following comprehensive content framework to fulfill the Voice Pedagogy Interest Group's vision of the ideal singing teacher's education, experience, knowledge, and skills.

The Comprehensive Voice Pedagogy Framework (CVPF) was centrally inspired by educational psychologist Lee Shulman's concept of Pedagogical Content Knowledge (PCK), defined as a specific combination of subject content and general pedagogy that includes "the most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations—in a word, the ways of representing and formulating the subject that make it comprehensible to others."[31] PCK has been applied by researchers to music education and choral methods.[32] Si Millican, instrumental music educator and researcher, asserts that "in the music education realm, PCK separates the professional musician from the professional music educator."[33] Therefore, we selected the term "Voice Pedagogical Content Knowledge" for the CVPF to encompass the unique combination of historical, science-based, and experience-based methods found in voice teaching.

Shulman's Model of Pedagogical Reasoning and Action (MPRA)[34] introduced seven categories of teacher knowledge that have been adopted by researchers from a spectrum of disciplines to describe their particular subject areas and create content-specific frameworks and models. Several of these models include categories of Teacher Knowledge that flow into and interact with PCK, showing how formally acquired knowledge, knowledge of the student and teaching environment, and teacher beliefs can inform and influence teaching methodology.[35]

The complexity of the interaction between a voice teacher and a voice student in the individual lesson environment is challenging to capture in any visual form and is worthy of continued analysis and reflection from practitioners and researchers in our profession. Previous research represents the inquiry-based and evidence-informed structures of teacher reasoning by using circular flow arrows between categories.[36] Additionally, the significant, profound impact from external practitioners, activities, society, and culture on the learning environment also must be represented. Some models offer a solution by illustrating wider interactions and contexts in an onion diagram with a flow chart of knowledge categories in the center.[37] These presentations inspired design and structural elements of the CPVF and model.

We do not offer a methodology with specific principles or a plan for curricular implementation in this proposal. Instead, we present an interconnected framework that fulfills the original goal of the Voice Pedagogy Interest Group and acknowledges the rich interactions between teacher, student, and colleagues from the artistic and healthcare communities. This framework is intended to be universal and inclusive regardless of singing genre or teaching environment. Additionally, we have included a helpful visual model of the framework (Figure 1).

KNOWLEDGE BASE

Multiple frameworks[38] group subcategories of teacher knowledge into a Knowledge Base, described as a "complex set of facts, theories, concepts, and beliefs that an individual acquires over time through thinking about new information and using it to make decisions and solve problems."[39] The Knowledge Base portion of the CVPF also uses this definition and adheres to aspects of Grossman's model, which shows interactive flow between each knowledge category.[40] Our framework consolidates Shulman's Model of Pedagogical Reasoning and Action[41] into three main categories that flow into PCK in order to present the unique pedagogic domain of voice teaching. These categories are called, Teacher Self, Formal Knowledge, and Knowledge of Student. Responding to more recent arguments by researchers calling for subject-area-specific definitions and representations of PCK,[42] we have customized the PCK category related to voice pedagogy using the term "Voice Pedagogical Content Knowledge" (VPCK).

Teacher Self[43]

No two singing teachers have followed the same path to teaching. The journeys and experiences of each teacher contribute to richness and diversity in the field of voice pedagogy. These artistic and pedagogic experiences, teaching philosophy and beliefs, aesthetic preferences, personality traits, behaviors, and attitudes comprise the teacher's self and shape each teacher's pedagogic approach.

Artistic experiences. Professional artistic experience provides the teacher with meaningful, first-hand knowledge of the professional singing and performance requirements of a particular genre and directly impacts their pedagogic

methods. A singing teacher should have some professional artistic singing experience in at least one area of vocal music (e.g., choral music, concert works, contemporary commercial music, musical theatre, opera, recital, sacred music). Furthermore, we encourage all voice teachers to continue to pursue appropriate performance experiences whenever they are able to do so.

Pedagogic experiences. Singing teachers should have both a basic level of teaching experience across a wide range of age groups and styles and an advanced level of teaching experience specific to the students and style(s) they will primarily teach. The voice teacher should have experience teaching students in both one to one and group formats. A teacher can attain this practical experience through voice pedagogy practicum classes, graduate teaching assistantships, mentored teaching, continuing education teaching programs, workshops, and internships.

Teaching philosophy and beliefs. Singing teachers should thoughtfully consider their primary philosophic tenets and beliefs surrounding the art of voice teaching. While teachers may greatly vary in their philosophic approach, all teachers will benefit from critically and philosophically contemplating the following questions as a starting point in the development of a teaching philosophy.

- Why do I teach singing?
- Do I believe anyone can sing? Why or why not?
- Which elements of singing do I feel are most important to the developing singer?
- What are my views on curricular planning?
- What skills do I believe each singer must possess?
- Is there an optimal progression of skill acquisition? Is that progression universal or unique to each individual student?
- How might I foster agency, creativity, and inclusivity in my studio?
- What is my philosophy on the role of the voice teacher in the studio, the community, the profession, and the world?

Aesthetic preferences. The art of singing will always be highly subjective. Although personal tastes and artistic preferences will play a role in teaching, teachers should

Comprehensive Voice Pedagogy Framework (CVPF): The CVPF endeavors to represent the interactive nature of the voice teaching environment both within and outside of the voice studio and how it dynamically informs the voice teacher's knowledge and methodology.

Knowledge Base: Ideal voice teachers are directed by four major information categories that assist them in diagnosing, directing, mentoring, and advising voice students in the studio:

- *Teacher Self*: The teacher's artistic and practitioner background, including their experiences (artistic and pedagogic), teaching philosophy and beliefs, aesthetic preferences, and personality traits, behaviors, and attitudes.
- *Formal Knowledge*: The teacher's acquired theoretical, practical, and general pedagogic knowledge.
- *Knowledge of Student*: The teacher's perceptions and observations of the student's actions and statements, both in the voice studio and other contexts.
- *Voice Pedagogical Content Knowledge (VPCK)*: The ability to transform knowledge into effective, strategic, and well reasoned voice teaching methods, tailored to the needs of each individual student and the educational context.

Selected Teacher Action (Augmented Feedback): The pedagogic action selected and communicated to the student. This action may be communicated by any effective method (e.g., including speaking, modeling, drawing, gesturing, writing).
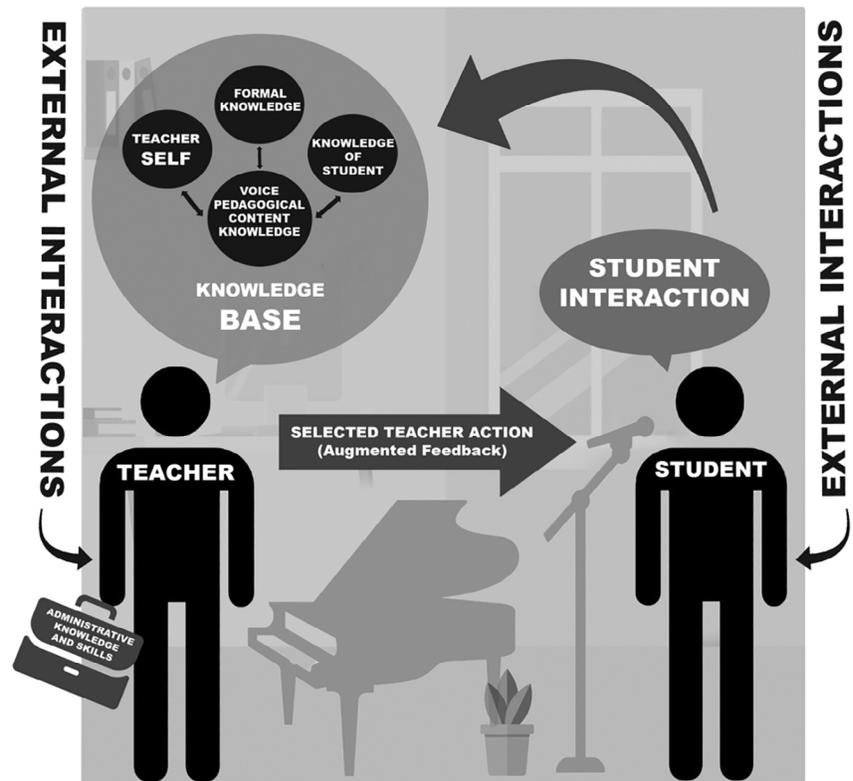

Figure 1. Comprehensive Voice Pedagogy Framework and Model. Graphic designed by Cavan Hendron.

Student Interaction: After the selected teacher action is communicated to and received by the student, the student processes the information through their internal knowledge base and responds to it. This response, observed and perceived by the teacher, enriches the teacher's Knowledge of the Student and influences the next Selected Teacher Action.

Administrative Knowledge and Skills: This category includes related computer and technology, business, and auxiliary knowledge and skills, helpful to teach-ers as they administer an institutional voice teaching program or private voice studio business.

External Interactions: Voice pedagogues and students function within an interlocking community of external interactions, including artistic, business, and medical professionals. An ideal voice teacher communicates with these specialists appropriately and assists the singing student in contextualizing, valuing, and interpreting their comments with a balanced perspective.

cultivate self-awareness of their own aesthetic values and consider the following questions:

- What aesthetic qualities do I typically prefer in each of the genres that I teach and/or perform?
- When, where, how, and why did I develop these aesthetic preferences? Was I influenced by a specific teacher, experience, and/or performer?

- How can I balance my aesthetic preferences with those of my student?
- Do my aesthetic preferences within a genre align with what would be traditionally expected in that genre? If not, how can I balance my own aesthetic preferences with the specific sounds that a genre might require in order for a student to work professionally?

Personality traits, behaviors, and attitudes. The rapport a singing teacher has with students also will impact learning outcomes. A teacher should possess, demonstrate, and cultivate empathy,[44] compassion, patience, and creativity. The teacher should also have a growth mindset[45] and be approachable and communicative with both students and colleagues.

The teacher should utilize and cultivate ideas proposed by neurobiology researchers to describe the mirroring impulses and empathetic responses voice teachers experience when observing a student. The concept of Kinesthetic Empathy (KE), which has been described as "listening with the body"[46] and allowing "the understanding of the actions of others from the inside,"[47] is believed by some researchers to reside in the Mirror Neuron System (MNS), which may respond in proportion to the observer's empathetic nature, emotion or sensory experiences, personality traits, capacities, and mental attitudes.[48] Many teachers anecdotally discuss the role of KE in their teaching and how it helps guide their pedagogic actions. We look forward to advances in neurobiology research to help explain this significant aspect of voice teaching.

Formal Knowledge

The ideal singing teacher should have a foundational level of theoretical, practical, and general pedagogic knowledge that informs their pedagogic decision-making. Theoretical knowledge provides the evidence and context that a voice teacher may use in practical application. This is not difficult to understand. The challenge lies in defining the separation of knowledge clearly between the theoretical and practical knowledge categories. As American industrialist Benjamin Brewster said, "In theory, theory and practice are the same. In practice, they are not,"[49] describing the enduring difficulty of fixing a brief, clear definition to the word "practice." However, for the purposes of voice pedagogy, practical knowledge may simply be defined as knowledge that comes through action.[50] General Pedagogical Knowledge (GPK) will enable the teacher to appropriately organize, transfer, and apply that knowledge in a practical and timely way with a student. Finally, teachers themselves should strive to be lifelong learners in all knowledge areas by regularly participating in continuing education opportunities.

Theoretical knowledge. Voice teachers will need to know and understand the following elements of the theoretical knowledge base of singing as these ideas and principles will guide and inform their practical application in the voice studio.

Anatomy and physiology. A voice teacher should possess a comprehensive knowledge in anatomy and physiology related to respiration, phonation, registration, resonation, and articulation. These concepts should be understood both in isolation and within the framework of a current scientific understanding of the voice mechanism and voice production across a wide variety of vocal styles. Furthermore, the voice teacher should understand the effects that biological sex and ontogeny may have on voice structures and physiological processes. The teacher might also wish to consult additional methodologies and adjacent practices related to postural alignment and movement (e.g., exercise science, somatic movement practices) that could be helpful in voice development.

Acoustics and psychoacoustics. The rapidly expanding areas of voice acoustics and psychoacoustics can provide insight into voice technique through both theoretical and applied perspectives. Voice acoustics and psychoacoustics offer a model to understand pedagogically relevant aspects of registration, tone color, vowel migration and modification, and differentiation of sounds within styles; additionally, cognition, perception, and psychoacoustics explain how we process and interpret those sounds. The teacher should understand the interplay between voice production, the radiated sound, and how we perceive that sound. The teacher should be aware of the full range of possible sounds the human voice can make. Rather than teaching to a single aesthetic model, voice acoustics can facilitate recognition of individuality within the framework of maximally efficient voice technique.

Voice health. While adhering to ethical principles (discussed in the general pedagogical knowledge section) and functioning within one's scope of practice,[51] a singing teacher should have a deep understanding of the principles of voice health and hygiene and strive to teach a singing technique that promotes voice health, efficiency, resiliency, and longevity. The voice teacher should also be aware of other factors that affect voice health and be able to provide students with guidance as

they balance periods of heavy voice loading with rest and recovery, singing through illness, and knowing when to cancel in cases where the long-term concerns of voice health outweigh short-term performance demands.

Body health and wellness. While adhering to ethical principles and functioning within one's scope of practice, the singing teacher should understand physical wellness and its effect on the voice. The teacher should have an understanding of how hormonal cycles (changes and imbalances) can affect the voice, and be aware of the effects of estrogen, progesterone, and testosterone on the voice, especially when training singers undergoing significant hormonal changes, such as puberty, menopause, hormone replacement therapy, and transgender hormone therapy. A voice teacher can be an advocate and help singers be aware of the sometimes overlooked effects of common medical conditions, treatments, and medications on the voice and refer to specialists in those areas as needed.

Hearing health. Hearing health has often been overlooked in traditional voice pedagogy; however, studies have indicated that both singers and teachers experience high levels of noise that could be damaging with long-term exposure.[52] Furthermore, auditory feedback and awareness greatly affect voice production. While adhering to ethical principles and functioning within one's scope of practice, teachers should be aware and understand the dangers of long-term exposure to high sound pressure levels in both unamplified and amplified contexts and advocate hearing health awareness for both singers and teachers. Even in the confines of the voice studio, practice room, and rehearsal space, musicians must prioritize hearing health.

Music literacy. Voice teachers should be proficient in music theory, form and analysis, music history, and performance practice across a wide variety of genres, but especially those areas related to vocal music and the specific genre(s) they teach. Knowledge in these areas takes instruction beyond simply teaching voice function, as the teacher guides an informed and independent artist.

Research literacy. Published research provides objective results from rigorous scientific investigation, often focused on isolated, nuanced aspects of the human voice; however, results from these studies can be woven together into a larger understanding of the voice that informs voice pedagogy. Voice teachers should be aware of the primary, peer reviewed journals related to voice pedagogy. When voice teachers can read and understand research studies themselves, it empowers them to make their own informed decisions about the validity of different teaching strategies and methods. Teachers should be able to understand research methodology and design (including experimental, qualitative, historical, and philosophic), extract relevant information, and practically implement this information into the studio. Some teachers may choose to further develop the important skills needed to assess the credibility of the source or author, the rigor of the methodology, and conduct primary research studies themselves; however, all voice teachers should remain both curious and naturally skeptical and seek to remain informed of the latest scientific advancements in voice pedagogy through any accessible resources (e.g., journals, webinars, workshops, conferences and symposia, and professional organizations).

Publications in historical and modern voice pedagogy. Voice teachers should have a working knowledge of the major figures, turning points, and writings throughout the history of voice pedagogy (at least from 1855 to the present).[53] To that end, a multitude of published resources exist in this category and can inform all areas of the voice teacher's knowledge base (e.g., group voice teaching, repertoire, diction, acting for the singer).

Terminology. The field of voice pedagogy has a rich and historic collection of terminology. Additionally, terminology specific to certain styles or genres exists, often classified as "industry" terminology. Although terminology in our profession continues to be updated and/or challenged as our empirical understanding of the voice grows, many terms that qualify as jargon still exist. The confusion created by the variation and lack of standardization in voice terminology requires singing teachers to acquire a deeper understanding of the theoretical knowledge base girded by research literacy in order to confidently build an accurate vocabulary to describe singing voice function.

Practical knowledge. Effective voice teaching depends on knowledge gained through practice and refined through singing performances and hours of teaching experience.

Diagnostic skills. Even with advances in the design, capabilities, and availability of sound analysis software, voice teachers must have the most important diagnostic

tools—well informed and developed eyes and ears—in order to diagnose any inefficiencies related to voice production and determine the physiological, acoustic, or psychological reasons they might occur. Voice teachers should also be able to cultivate these skills with students as they work to encourage technical independence and the ability to listen critically to sung performances.

Repertoire. Teachers should have an advanced and deep knowledge of repertoire in the genre(s) they teach or intend to teach. Teachers should be able to understand the historical background of a piece and evaluate the vocal, musical, lyrical, and dramatic demands of a selection in order to make informed and effective repertoire choices appropriate to the student's current abilities, age, professional goals, and industry expectations. The teacher must be able to guide a student to a dynamic and truthful dramatic interpretation of repertoire informed by the lyrics, style, and tradition.

Diction. Teachers of classical singing should have a solid understanding of the lyric diction systems of the primary singing languages (English, Italian, French, German, and Latin) and be comfortable interpreting and using the International Phonetic Alphabet. Ideally, knowledge of lyric diction in other languages with substantial art song and operatic literature would also be acquired. Teachers of contemporary commercial music need to understand diction relative to the genre(s) they teach both in unamplified and amplified contexts. If appropriate, teachers should have a basic understanding of the dialects required by some roles and how they might impact voice production.

Voice Classification and Type. Each music genre has specific industry expectations that often categorize repertoire and roles (e.g., *Fach*, type). Singing teachers should be aware of these classifications across all music genres but particularly any genres in which their students have professional aims.

Piano. Although one might choose to use any instrument to facilitate voice teaching, the piano remains the most common instrument for voice instruction. A singing teacher should have the basic piano and accompaniment skills needed to effectively facilitate vocalise and repertoire work in the voice studio.

Acting and movement. Teachers should have a basic command of acting and movement methodologies useful for singing performance. While teachers may refer students to other experts in these areas, they should be able to guide students to an effective interpretation of a song through acting and movement appropriate to the role, genre, and performance venue.

Stage Deportment. The teacher should be able to advise the student in practical aspects of stage deportment for solo performance and audition settings appropriate to the genre being performed (e.g., stage presence, entering and exiting the stage, demeanor, bowing, speaking from the stage, and interactions with conductors, accompanists, band or orchestra members).

Voice Technology. The field of voice technology continues to grow and offer a variety of technological learning resources available to singers, ranging from voice recording and voice analysis software to mobile apps for accompaniment. The teacher should understand these technological advancements and be able to effectively incorporate those technological learning resources that contribute to student growth and more efficient practice time.

Amplification. Voice teachers of contemporary commercial music genres should understand and have access to amplification and audio equipment to use in the studio in order to effectively advise students singing with amplification.

General Pedagogical Knowledge. General Pedagogical Knowledge (GPK) covers the broad principles and strategies of instruction that apply to all areas of teaching.[54] Training in GPK typically exists in music education and teacher training programs; however, voice teachers also need to understand and be able to implement general pedagogy principles in order to be effective in the studio and classroom. GPK provides a framework for the singing teacher to anticipate reasonable student outcomes and structure lesson plans to maximize student learning. GPK also includes and guides the teacher's development, organization, and management of the studio, including syllabus and studio policies.

The singing teacher should understand and be able to practically implement cognitive and motor learning strategies related to skill acquisition, practice, and memorization, including (a) understanding the difference between conceptual knowledge and procedural knowledge, (b) recognizing and planning for the different stages of motor learning, (c) knowing when to employ the different modalities of practice (e.g., distributed ver-

sus massed, varied versus constant, and random versus blocked), and (d) developing strategies for effective feedback that will produce skillful, independent singers who can create their own "deliberate practice" routines.[55]

Singing teachers should be able to elicit and observe improvement quickly through the implementation of appropriate assignments in technique and repertoire. They must effectively translate difficult concepts to the novice without sacrificing the amount of time the student needs for singing during the lesson period. Through this process, teachers use GPK to monitor and assess the Teacher Self, which leads to continued improvement of both general and specific pedagogic tactics and strategies.

Voice teachers should adhere to principles of diversity, equity, and inclusion as expressed by professional organizations such as the National Association of Teachers of Singing (NATS), which "strives to celebrate the unique identities, varied backgrounds, and experience of all individuals" to ensure "that all voices are valued and heard in an inclusive environment with equitable treatment for all."[56] Whenever possible, voice teachers should endeavor to provide effective accommodations and modifications for students with physical, behavioral, mental, or learning disabilities. Although voice teachers may not have any formal training regarding adaptations for students with disabilities, they can request assistance from their institution's disability services coordinator, seek further training, consult available teaching resources, and/or seek advice from experienced colleagues and advisors.[57]

Teachers must model professional, dignified, impartial, and equitable behavior in the studio and should be aware of any ethical codes established by professional organizations. NATS maintains a Code of Ethics for its members that includes maintaining "appropriate boundaries in psychological, emotional, and personal contact with students."[58] One on one teaching settings naturally create an atmosphere where blurred power lines between teacher and student may exist. Thus, teachers should be aware of these potential pitfalls and maintain a professional atmosphere that still retains warmth and congeniality. Voice teachers can model this type of behavior and become valuable role models for students who will need to set similar boundaries in their preprofessional and professional careers.

As an important part of maintaining a professional demeanor and learning environment, teachers should respect each student's lesson time by striving for impeccable punctuality, limiting excessive and unrelated talk, and avoiding unnecessary distractions that disrupt instruction (e.g., phones and email). Likewise, students should be encouraged to respect teachers and colleagues by being punctual, respectful in discussions, and focused during lessons and rehearsals.

Knowledge of Student

The CVPF combines two of Shulman's knowledge categories (Knowledge of Learners and their Characteristics and Knowledge of Educational Contexts) into a separate category, titled, Knowledge of Student. Millican defines this category as the "skill and knowledge related to the awareness of social, physical, and psychological development levels of students," including "learning styles, entry points, and diversities of all kinds."[59]

While respecting any ethical and legal boundaries that may exist, voice teachers should appropriately collect information about the student's voice health history, past voice training history, goals, personality characteristics and learning preferences, and any other information pertinent to the student's success and individualized voice instruction.

Voice health history. Teachers should not require students to disclose any information related to their current or past voice, physical, or mental health history;[60] however, teachers may invite such disclosure by indicating that information related to a student's overall health history, and, most importantly, voice health history, can be important in developing effective instructional methods. Teachers should maintain confidentiality in all aspects of teaching, but especially concerning a student's health history.

Past voice study and performance history. Teachers should aim to understand the student's past voice study and performance background. This may include former voice teachers, length of study, helpful concepts and technical ideas learned, a list of studied and performed repertoire, and a résumé of past and upcoming performances.

Goals. Teachers should inquire about the short-term and long-term career and life aspirations of each student while realizing that a music education major, a professional rock singer, and an avocational choral singer will have divergent career needs and will desire customized goals and learning outcomes. Teachers should establish related learning outcomes in voice technique, musicianship, repertoire, and artistry that aim to advance the student's progress toward those goals and help the student regularly assess progress, make necessary adjustments, and refocus goals as needed. When establishing goals with students, teachers may want to discuss how much investment (e.g., time, cost) students realistically may be willing and able to spend in pursuit of their voice and career goals. Teachers should identify the various styles and genres that interest each student. While teachers may choose to employ cross-training techniques and have students explore diverse repertoire, they should use these methods to guide students to success in the musical genres they want to sing.

Personality characteristics and learning preferences. Teachers should aim to understand both communicated and perceived aspects of student individual personality characteristics and learning preferences. Students may choose to share specific information with the teacher that can inform instruction, including information related to preferences, mindset, native language, gender identification, or any other factors that may not otherwise be openly perceived. Through observation, teachers can also be aware of the student's nonverbal behavior(s) during singing and nonsinging activities that may helpfully inform the teacher as they structure the lessons and make specific instructional choices.

Voice Pedagogical Content Knowledge

Teachers synthesize the knowledge gained from their own knowledge base and knowledge of the student in order to develop their own Voice Pedagogical Content Knowledge (VPCK). VPCK constitutes the art of voice teaching, and while it does not depend upon one universally implemented method, the ideal voice teacher uses VPCK to apply all of the knowledge from the sources described heretofore in order to develop teaching strategies tailored to the unique needs of each student in the voice studio. Voice teachers must be able to transform

scientific knowledge and functional principles into practical ideas and concepts that students can easily understand and implement.

Artistic and Professional Mentorship Skills

Artistic and professional mentorship are included in the VPCK category because mentoring a student requires a unique combination of all of the teacher's knowledge, skills, and experiences described thus far. Rather than acting as a gatekeeper to an ultimately unattainable ideal of perfection, the teacher acts as a fellow traveler and mentor who provides insight, knowledge, and guidance across a diverse range of artistic and professional topics. While teachers should never act as therapist or psychologist (unless they are appropriately licensed and certified), teachers can listen and offer helpful suggestions regarding goal setting, managing ideal performance activation, overcoming performance anxiety, organization, networking, career opportunities and development, time management, and work/life balance.

SELECTED TEACHER ACTION (AUGMENTED FEEDBACK) AND STUDENT INTERACTION[61]

Education researcher John Smyth describes the essence of the student interaction phenomenon as a "process of mutual modification" between teacher and student.[62] To the observer, this process can seem fairly simple: The teacher communicates information or directives that are received by the student and the student responds. However, a significant part of this exchange cannot be witnessed by an onlooker. Before the teacher communicates with the student, they select an action as a result of information from the Knowledge Base filtered through VPCK. The teacher's methodic communication to the student is the Selected Teacher Action. When the student receives that communication, it serves as *augmented feedback* for the student, defined in the motor learning literature as any external information delivered to the learner by an external source.[63] The student may respond and communicate back to the teacher through speech, singing, behavior(s), or perceived nonverbal communication. Teachers must then evaluate the result of their directions by listening to and observing the student's response. This is the Student Interaction. Some of the

information gleaned from this student interaction will also fortify the teacher's Knowledge of Student, which may generate a new cognitive process that ends with a reinforcement, clarification, or modification of the original Selected Teacher Action or a new instructional direction. Although this process may appear instinctual or simply reactive, this aspect of voice pedagogy can be effectively acquired by observing master teachers, studying cognitive psychology (and especially motor learning research), voice pedagogy practicum classes, receiving feedback in supervised teaching environments, and reflecting on the trial and error of teaching experience.

Teachers may wish to consider several factors throughout this process. Philosopher Donald Schön cautions experienced teachers to regularly reflect on even their most effective and efficient methods lest they become too reflexive in their use and reduce their effectiveness in novel situations.[64]

First, teachers should routinely and consistently revisit student goals and learning outcomes to judge the efficacy of their instruction and reassess student work and characteristics. In order to differentiate between novelty effect, short-term performance, and long-term, repeatable learning and skill development, the teacher should observe student behaviors over a period of time in various situations, times of day, performing environments, repertoire, and distractions.[65]

Second, teachers may choose to encourage and foster student led inquiry and discovery. In this model, instruction is influenced by the student's own discoveries during practice. Teachers could ask students to describe what aspects of their practice were successful and to describe any challenges they may have encountered. This line of inquiry provides a framework that may aid the teacher in structuring the lesson. Similarly, teachers may ask the student, "What would you like to work on today?," which allows both teacher and student to explore issues that have emerged during student practice time and provides the teacher with insights into the student's motivations and prioritizations in their independent work. From a practical standpoint, this simple question also gives the student the opportunity to inform the teacher of upcoming auditions or performances, ensuring that the lesson time can be appropriately devoted to any pertinent repertoire.

Third, teachers may encourage students to select their own repertoire and to prioritize which repertoire to work on in any individual lesson. This approach encourages students to listen, research, and discover repertoire. Furthermore, many teachers have discovered that students more diligently prepare and practice repertoire they have chosen themselves.[66]

ADMINISTRATIVE KNOWLEDGE AND SKILLS[67]

Teachers generally spend a majority of time and effort in a voice lesson addressing issues of voice production and musical expression. However, similar to other professions, teachers will need to possess some basic administrative knowledge and skills pertinent to communication and business. While administrative knowledge and skills do not directly inform the pedagogic interaction between teacher and student, voice teachers will find these skills essential as they administer institutional voice teaching programs or run private voice studio businesses.

Computer skills and technology. Teachers should stay up to date and be able to use basic computer software programs for email, word processing, spreadsheets, data analysis, PDF creation and editing, presentations, basic video and audio recording and editing, technology related to the teaching of online voice lessons (if applicable), and software programs that facilitate the scheduling and online payment of student lessons, classes, and workshops.

Business skills. Business skills, not often included in higher education programs, are nevertheless critical to student and teacher success; they include voice studio management, bookkeeping, website design, marketing and social media marketing, recruitment, and course development.

Auxiliary skills. Skills in entrepreneurship are helpful in singing and maintaining a private voice studio. While a small number of performers are able to build traditional performing careers with agents, managers, and publicists, a majority of individuals will need to build careers with a variety of music-related or music-adjacent jobs. Teachers should be able to encourage and direct students as they pursue and develop essential skill sets in contiguous areas and work toward multiple revenue streams.

EXTERNAL INTERACTIONS

Voice pedagogues and students function within an interlocking community of external interactions, including other artistic, business, and medical professionals. An ideal voice teacher communicates with these specialists appropriately and assists the singing student in contextualizing, valuing, and interpreting these experts' comments. However wise and experienced a voice teacher may be, certain aspects of voice training, career mentoring, or voice health will fall outside their realm of expertise. Teachers should resist providing advice outside their areas of knowledge or experience, but instead have a network of professional referrals available to students (e.g., laryngology, speech language pathology, psychology, physical therapy). Each member of a student's team of professionals plays a part in helping them reach their goals. It truly takes a village to develop and nurture a successful singer.

Collegiality. The importance of cultivating healthy relationships cannot be overstated in collaborative fields such as the performing arts, where mutual respect should occur between all members of a creative team, including conductors, coaches, directors, administrators, producers, costume designers, recording engineers, and many others. Collegiality, or the ability to get along well with one's colleagues, is an extremely important piece of becoming a successful performer and the student should see this behavior modeled by the voice teacher at all times. Voice teachers should refrain from participating in gossip or disrespecting other voice professionals. Instead, voice teachers should be important allies in helping students navigate their professional relationships and reconcile seemingly contradictory requests from various professionals.

Professional organizations. Many professional organizations exist in areas related to the voice profession, including voice pedagogy, vocology, voice science, and those specific to performing or teaching in different genres. Teachers of singing should join and be active in professional organizations that support their goals, both through professional activity and via their own continuing education.

CONCLUSION

The Voice Pedagogy Interest Group is composed of academic voice pedagogy teachers who specialize in training the next generation of voice teachers. We rarely experience extended opportunities to meaningfully reflect with our colleagues on our work and grapple with difficult specialization-related problems in our profession; Summits I and II were a unique and wonderful opportunity to do so. Each of the more than seventy consensus statements collected from Summit II represent decisions preceded by thoughtful and fruitful discussions that occurred over multiple days with thirty-seven colleagues from across the United States and Canada.

As we reflect on historical voice pedagogy, the past efforts of our colleagues to codify and systematize voice teacher education, and the more recent questions and consensus statements from Summits I and II, we realize the essential, yet enormous, task that we have undertaken. Our profession has continued to grow and change since Summit II, which occurred during pre-pandemic times when our lives and institutions were both knowingly and unknowingly poised on the precipice of change. We hope to continue our work and advance the original goals and aims of both summits. To that end, we hope this paper will inspire divergent thinking, fresh ideas, creative solutions, and energizing discussions within the profession.

We, as voice teachers and pedagogy instructors, work daily to develop our knowledge and skills throughout our careers in order to meaningfully approach the ideal voice teacher we have described in this paper, and yet, we know we will not achieve it. Nevertheless, we continue to take important steps forward, however small, hoping to improve and make things better for future voice teachers and the students they will teach. We hope the important work we offer here will continue to shape and inform the field of voice pedagogy in the years to come.

ACKNOWLEDGEMENTS

NOTES

1. Richard Miller, "The Singing Teacher in the Age of Voice Science," first published in Robert Thayer Sataloff, ed., *Professional Voice: The Science and Art of Clinical Care* (New York: Raven Press, 1991), 375–380.

2. Shortly following Summit II: The Sequel (2018), co-chairs, Lynn Helding and Scott McCoy, proposed the name Voice Pedagogy Interest Group, following other professional associations that often have interest or study groups.

3. Members of the Writers Group were nominated and unanimously approved by the Voice Pedagogy Interest Group attendees at Summit II and charged with drafting a position paper based on the approved consensus statements of the summit.

4. "Pedagogy, n.," Oxford English Dictionary, Oxford University Press; https://www.oed.com/viewdictionaryentry/Entry/139520 (accessed April 18, 2021).

5. "Science," Collins, Collins Dictionary; https://www.collinsdictionary.com/dictionary/english/science (accessed April 18, 2021).

6. Ingo R. Titze and Katherine Verdolini Abbott, *Vocology: The Science and Practice of Voice Habilitation* (Salt Lake City, UT: National Center for Voice and Speech, 2012), 11.

7. American Academy of Teachers of Singing, "In Support of Fact-Based Voice Pedagogy and Terminology," *Journal of Singing* 71, no. 1 (September/October 2014): 9–14.

8. Lynn Helding, "Science-Informed Vocal Pedagogy: Motor Learning, Deliberate Practice and the Challenge of Cognitive Dissonance," in Helga R. Gudmundsdottir, Carol Beynon, Karen M. Ludke, and Annabel J. Cohen, eds., *The Routledge Companion to Interdisciplinary Studies in Singing, Volume II: Education* (Abington, UK: Routledge, 2020a), 182–193.

9. The Evidence-Based Medical model was developed with the goal of improving patient outcomes using the best clinical and scientific knowledge along with the patient's goals to determine care plans. For more information, see David L. Sackett, William M. C. Rosenberg, J. A. Muir Gray, R. Brian Haynes, and W. Scott Richardson, "Evidence Based Medicine: What It Is and What It Isn't," *British Medical Journal* 312 (January 1996).

10. Kimberly James, "Evidence-Based Singing: Incorporating Research & Technology in the Applied Studio" (Poster Presentation, College Music Society National Conference, Indianapolis, IN, November 2015); Kimberly James, "Evidence-Based Singing: Balancing Aesthetics, Research, & Praxis in the Applied Studio" (Poster Presentation, National Association of Teachers of Singing National Conference, Chicago, IL, July 2016).

11. Kari Ragan, "Defining Evidence-Based Voice Pedagogy: A New Framework," *Journal of Singing* 75, no. 2 (November/December 2018): 157–160; Lynn Maxfield and Kari Ragan, "Evidence-Based Voice Pedagogy (EBVP), Part 1: Voice Research Component," *Journal of Singing* 77, no. 4 (March/April 2021): 543–547.

12. Matthew Hoch, "Historical Landmarks in Singing Voice Pedagogy," *Voice and Speech Review* 13, no. 1 (2018): 43–60.

13. James Stark, *Bel Canto: A History of Vocal Pedagogy* (Toronto: University of Toronto Press, 1999).

14. Ibid.

15. Miller.

16. Robert Thayer Sataloff, "G. Paul Moore Lecture," *Journal of Voice* 9, no. 3 (1995): 216.

17. Lynn Helding, "What's in a Name? The Evocation of Expertise" (Keynote Lecture, Specialty Training in Voice Health Symposium at the National Center for Voice and Speech, Salt Lake City, UT, April 24, 2013).

18. For a comprehensive account of the early NATS efforts to standardize the education of voice teachers, see Amelia A. Rollings, "Of Charlatans, Humbugs, and Pocketbooks: Advocacy of Standards, Education, and Certification for Voice Teachers in *The Bulletin* of the National Association of Teachers of Singing, 1944–1954," *Voice and Speech Review* 14, no. 1 (2020): 124–142.

19. John Wilcox, "What the Voice Teacher Must Know," in *Studies in Musical Education History and Aesthetics, Thirteenth Series, Papers and Proceedings of the Music Teachers' National Association* (Hartford, CT: Music Teachers National Association, 1919): 129–135.

20. Ibid.

21. Ruth Douglass, "Systematic Teacher Training is Lacking," *The Bulletin* 4, no. 1 (September-October 1947): 1–2.

22. Ibid.

23. Edward Harris, "Basic Fundamental Requirements for Teachers of Singing," *The Bulletin* 4, no. 4 (February-March 1948): 1.

24. Advisory Committee on Vocal Education, "Fundamental Requirements for Teachers of Singing," *The Bulletin* 5, no. 1 (September-October 1948): 1–2, 7–8.

25. Richard DeYoung, "The President's Letter," *The Bulletin* 5, no. 2 (November-December 1948): 2.

26. Advisory Committee on Vocal Education, "Second Supplementary Report of the Advisory Committee on Vocal Education, Covering Proposed Curriculum for the Training of Teachers of Singing in Universities and Schools of Music," *The Bulletin* 6, no. 3 (December 1949-January 1950).

27. Harvey Ringel, *History of the National Association of Teachers of Singing* (Jacksonville, FL: National Association of Teachers of Singing, 1990), 145.

28. American Academy of Teachers of Singing, "Qualifications for Teachers of Singing," *Journal of Singing* 58, no. 2 (November/December 2001): 103–104.

29. Helding (2020a).

30. The CVPF was initially formulated by Osborne, refined through conversations with Rollings Bigler, and reviewed by the Voice Pedagogy Interest Group leadership.

31. Lee S. Shulman, "Those Who Understand: Knowledge Growth in Teaching," *Educational Researcher* 15, no. 2 (1986): 6–7; https://doi.org/10.2307/1175860.

32. J. R. Barrett, "Teaching for Understanding in Music Teacher Education," *Visions of Research in Music Education* 24 (2014): 217–234; Kyle W. Chandler, "A Survey of Choral Methods Instructors at NASM-Accredited Institutions: Pedagogical Content Knowledge Orientation and the Choral Methods Class" (Dissertation, University of Colorado, Boulder, 2012); Linda Darling-Hammond, "Constructing 21st-Century Teacher Education," *Journal of Teacher Education* 57, no. 3 (May 1, 2006): 300–314; https://doi.org/10.1177/0022487105285962; Teresa Mateiro, Joan Russell, and Maria Westvall, "Student Music Teachers' Perceptions of Pedagogical Content Knowledge-in- Action: An Inquiry across Three Countries," *Finnish Music Journal* 15 (2012): 12; J. Si Millican, "A New Framework for Music Education Knowledge and Skill," *Journal of Music Teacher Education* 18, no. 1 (October 1, 2008): 67–78; https://doi.org/10.1177/1057083708323146; John Christopher Venesile, "The Acquisition of Pedagogical Content Knowledge by Vocal Jazz Educators" (PhD dissertation, Case Western Reserve University, 2010).

33. Millican.

34. Lee Shulman, "Knowledge and Teaching: Foundations of the New Reform," *Harvard Educational Review* 57, no. 1 (1987): 1–23; https://doi.org/10.17763/haer.57.1.j463w79r56455411.

35. Hashweh; Chandler; Millican; William Carlsen, "Domains of Teacher Knowledge," in Julie Gess-Newsome and Norman G. Lederman, eds., *Examining Pedagogical Content Knowledge* (Amsterdam: Kluwer Academic Publishers, 1999), 133–144; https://doi.org/10.1007/0-306-47217-1_5; Greta Morine-Dershimer and Todd Kent, "The Complex Nature and Sources of Teachers' Pedagogical Knowledge," in Gess-Newsome and Lederman, 21–50.

36. Helen Timperley, Aaron Wilson, Heather Barrar, and Irene Fung, "Teacher Professional Learning and Development: Best Evidence Synthesis Iteration [BES]," Wellington, New Zealand: Ministry of Education, 2007; https://www.oecd.org/education/school/48727127.pdf (accessed May 2, 2021).

37. Darling-Hammond; Millican; Timperley et al.

38. Timperley et al.; Shulman (1986,1987); Pamela L. Grossman, *The Making of a Teacher: Teacher Knowledge and Teacher Education*, Professional Development and Practice Series (New York: Teachers College Press, 1990).

39. Timperley et al., 283

40. Grossman.

41. Shulman (1987)

42. Maher Hashweh, "Pedagogical Content Knowledge: Twenty-Five Years Later," in Cheryl J. Craig, Paulien C. Meijer, and Jan Broeckmans, eds., *Teacher Thinking to Teachers and Teaching: The Evolution of a Research Community (Advances in Research on Teaching Vol. 19)* (Bingley, UK: Emerald Group Publishing Limited, 2013), 115–140; https://doi.org/10.1108/S1479-3687(2013)0000019009; Jin Li, "Creativity in Horizontal and Vertical Domains," *Creativity Research Journal* 10, no. 2–3 (April 1, 1997): 107–132; https://doi.org/10.1080/10400419.1997.9651213.

43. The Teacher Self encompasses elements of what some refer to as "Theories of Practice" (see Timperley et al.); "Teachers' Beliefs" (see Edward Warburton, "Beyond Steps: The Need for Pedagogical Knowledge in Dance," *Journal of Dance Education* 8, no. 1 [January 1, 2008]: 7–12; https://doi.org/10.1080/15290824.2008.10387353); "Knowledge of Yourself" (see Freema Elbaz, *Teacher Thinking : A Study of Practical Knowledge* [London: Routledge, 2018]). Timperley et al. recommends that teachers actively engage with and examine these self-concepts throughout their teaching lives in light of new evidence and information they acquire.

44. Empathy, an opaque concept in the literature, can encompass different subcategories that may operate as innate or automatic traits and others that are likely a complex cognitive skill. See Vittorio Gallese, "Empathy, Embodied Simulation, and the Brain: Commentary on Aragno and Zepf/Hartmann," *Journal of the American Psychoanalytic Association* 56, no. 3 (September 1, 2008): 769–781; Karen E. Gerdes and Elizabeth Segal, "Importance of Empathy for Social Work Practice: Integrating New Science," *Social Work* 56, no. 2 (2011): 141–148. Because the concept of learning empathy is not currently a fully understood idea or a direct goal of musical or educational training, we have chosen to place it in the Teacher Self category.

45. Carol S. Dweck, *Mindset: The New Psychology of Success* (New York: Ballantine Books, 2006).

46. Marina Rova, "Embodying Kinaesthetic Empathy: A Practice-Based and Interdisciplinary Investigation" (Doctoral Thesis, University of Roehampton, 2017), 86–87.

47. Giacomo Rizzolatti and Corrado Sinigaglia, "The Functional Role of the Parieto-Frontal Mirror Circuit: Interpretations and Misinterpretations," *Nature Reviews Neuroscience* 11 (March 1, 2010): 264–274; https://doi.org/10.1038/nrn2805.

48. Gallese; Lynn Helding, *The Musician's Mind: Teaching, Learning, and Performance in the Age of Brain Science* (Lanham, MD: Rowman & Littlefield, January, 2020b); Lynn Helding, "Cognition in the Age of Corona: Teaching Students How to Learn," *Journal of Singing* 77, no. 2 (November/December 2020c): 249–259; David Meyer and Lynn Helding, "Practical Science in the Studio: 'No-Tech' Strategies," *Journal of Singing* 77, no. 3 (January/February 2021): 359–367. Helding (2020b, 2020c) and Meyer and Helding discuss the pedagogic implications of recent research into the MNS that underpin motor imagery and mental practice and emphasizes that a singer needs to have performed a vocal task frequently in order to recall that motor memory without actually singing, let alone in a way that promotes learning.

49. Benjamin Brewster, "Portfolio: Theory and Practice," *The Yale Literary Magazine* 47, no. 5 (1882): 202.

50. In the lexicon of learning theory, this is the difference between *declarative learning* and *procedural learning.* In cognitive science, declarative learning is defined as a process that results in a permanent change in behavior as a result of experience. Procedural learning is a process that results in a permanent change in behavior as a result of practice (see Helding, 2020a).

51. A 2005 joint statement published by ASHA, NATS, and VASTA defines the scope of practice as the "development of the voice to its maximum function for use in singing . . . with attention given to the development of full pitch and dynamic range, artistic quality, and vocal endurance of the singing voice." See American Speech-Language Hearing Association, "The Role of the Speech-Language Pathologist, the Teacher of Singing, and the Speaking Voice Trainer in Voice Habilitation," Technical Report, 2005, https://www.asha.org/policy/TR2005–00147. However, as Brand discusses at length, the scope of practice for a voice teacher has always been vague because of the lack of training standards, certification procedures, and regulatory guidelines for the profession. See Emily Katherine Brand, "Humanistic Vocal Pedagogy: Exploring a Voice Teacher's Scope of Practice through a Perspective of Wellness" (DMA Dissertation, The Ohio State University, 2016), 40; https://etd.ohiolink.edu/apexprod/rws_olink/r/1501/10?p10_etd_subid=114055&clear=10.

52. Mitchell J. Isaac, Deanna H. McBroom, Shaun A. Nguyen, and Lucinda A. Halstead, "Prevalence of Hearing Loss in Teachers of Singing and Voice Students," *Journal of Voice* 31, no. 3 (2017): 379; Yvonne Redman, Chiara Vercelli, Lady Catherine Cantor-Cutiva, and Pasquale Bottalico, "Work-Related Communicative Profile of Voice Teachers: Effects of Classroom Noise on Voice and Hearing Abilities," *Journal of Voice* (July 3, 2020), in press.

53. For an overview of historical voice pedagogy, see Hoch (2018); Richard Miller, "Historical Overview of Voice Pedagogy," first published in Robert Thayer Sataloff, *The Science and Art of Clinical Care* (San Diego: Plural Publishing, 2005), 1009–1020; Rockford Sansom, ed., *The History of Voice Pedagogy: Multidisciplinary Reflections on Training* (Abington, UK: Routledge, 2021).

54. Shulman (1987).

55. Helding (2020b).

56. "About Us: Our Diversity and Inclusion Statement," The National Association of Teachers of Singing; https://www.nats.org/who-is-nats.html (accessed May 1, 2021).

57. Ann Cravero, "Exceptional Students in the Voice Studio: Understanding and Training Students with Asperger's Syndrome," *Journal of Singing* 77, no. 2 (November/December 2020): 159–173.

58. "Code of Ethics," The National Association of Teachers of Singing; https://www.nats.org/code-of-ethics.html (accessed May 1, 2021).

59. Millican, 68.

60. US federal law protects the privacy of patient and student records with explicit regulations through the Family Educational Rights and Privacy Act (FERPA) and the Health Insurance Portability and Accountability Act (HIPAA). A helpful, explanatory graphic can be accessed at https://www.cdc.gov/phlp/docs/hipaa-ferpa-infographic-508.pdf.

61. No voice teacher, regardless of their proximity to the ideal, can truly know what goes on inside the mind or body of a student. Timperley et al., 14: "what is going on in a student's mind in response to a particular act of teaching is essentially unobservable, but developing the skills to piece together as accurate a picture as possible is central to understanding the impact of one's practice."

62. John Smyth, *Teachers as Collaborative Learners: Challenging Dominant Forms of Supervision* (Philadelphia, PA: Open University Press, 1991), xv.

63. Michael Wälchli, Jan Ruffieux, Yann Bourquin, Martin Keller, and Wolfgang Taube, "Maximizing Performance: Augmented Feedback, Focus of Attention, and/or Reward?," *Medicine and Science in Sports and Exercise* 48, no. 4 (November 20, 2015): 714–719, https://doi.org/10.1249/MSS.0000000000000818.

64. Schön calls this "reflecting-in-practice," which he recommends as an antidote to overlearning, frustration and burnout in teachers and other practitioners." Donald A. Schön, *The Reflective Practitioner: How Professionals Think in Action* (Avebury, England: Ashgate Publishing Limited, 1991), 59–61.

65. As Schulman states, "the most formidable challenge for anyone in a profession is not applying new theoretical knowledge but learning from experience." Lee Shulman, "Theory, Practice, and the Education of Professionals," *The Elementary School Journal* 98, no. 5 (1998): 519.

66. James M. Renwick and Gary E. McPherson, "Interest and Choice: Student-Selected Repertoire and Its Effect on Practising Behaviour," *British Journal of Music Education* 19, no. 2 (July 2002); https://doi.org/10.1017/S0265051702000256.

67. Millican adds this knowledge category to Schulman's MPRA to describe the administrative duties expected from instrumental music educators. Administrative duties are represented in his model as a "supportive platform" to other knowledge categories because it is "not directly related to classroom instruction." Schulman (1987), 70.

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Katherine Osborne was appointed universitetslektor i sång at Musikhögskolan i Piteå/Luleå Tekniska Universitet (Sweden) in 2019 after serving on the voice faculties at University of Northern Iowa, Ohio Wesleyan University, and the Washington National Cathedral. Osborne has presented research and workshops related to voice pedagogy, voice science, and singing health at conferences and meetings, including the Voice Foundation Annual Symposium and the International Congress of Voice Teachers (2017). She has contributed an article to *VoicePrints: The Journal of the New York Singing Teacher's Association* and was co-editor for *Great Teachers on Great Singing* by Robin Rice. In 2014 she was honored to receive the Van Lawrence Fellowship, presented by the Voice Foundation and NATS.

Osborne maintains an active performing career in opera, oratorio, and art song. Her training includes a Doctor of Musical Arts degree and Singing Health Specialization from OSU, Master of Voice Pedagogy degree from Westminster Choir College, a Bachelor of Music degree from Stetson University, and a 2010 teaching internship with the National Association of Teachers of Singing (NATS).

My heart leaps up when I behold
    A rainbow in the sky:
So was it when my life began;
So is it now I am a man;
So be it when I shall grow old,
    Or let me die!
The Child is father of the Man;
And I could wish my days to be
Bound each to each by natural piety.

        William Wordsworth, "My Heart Leaps Up"