

Integrating Pharyngeal-Voice and Bel Canto Pedagogies: A Conceptual Framework for 21st-Century Vocal Music Education

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Abstract: *This paper presents a conceptual framework for integrating pharyngeal voice (咽音) and bel canto pedagogies in twenty-first-century vocal music education. Bel canto offers a historically influential foundation characterized by chiaroscuro resonance, legato line, and refined breath control, while pharyngeal voice traditions contribute distinctive resonance strategies, timbral brilliance, and cross-cultural parallels with European practices such as the nineteenth-century “voce faringea”. Despite these complementarities, pharyngeal voice techniques remain largely absent from mainstream curricula. To address this gap, the article proposes a three-pillar model consisting of vocal physiology, pedagogical design, and transcultural aesthetics. The physiology pillar aligns both traditions with contemporary voice science to ensure technical efficiency and vocal health; the pedagogical design pillar emphasizes curriculum sequencing, assessment practices, and teacher development; and the transcultural aesthetics pillar positions both approaches as co-equal knowledge systems, advancing intercultural and culturally sustaining pedagogy. This framework offers educators an inclusive, scientifically grounded, and artistically rich pathway to broaden vocal training and prepare singers for the plural musical realities of the twenty-first century.*

Keywords: Bel Canto; Pedagogy; Pharyngeal Voice; Vocal Physiology; Intercultural Music Education; Transcultural Aesthetics

1. Introduction

1.1 Transforming Contexts of Vocal Music Education

Vocal music education is undergoing rapid change as globalization, digital communication, and intercultural artistic exchange reshape the contexts in which singers learn and perform (Westerlund et al., 2022). These developments challenge established pedagogical models and invite approaches that combine scientific understanding of the voice with recognition of diverse cultural and aesthetic perspectives (Bond, 2017; Yoo & Kang, 2021). Teachers and institutions are increasingly expected to prepare singers who are technically secure and responsive to multiple musical heritages.

1.2 The Enduring and Evolving Role of Bel Canto

Within this changing landscape, Western bel canto continues to serve as a central tradition in classical singing. Originating in seventeenth- and eighteenth-century Italy and flourishing throughout the nineteenth century, bel canto is known for its smooth legato, balanced resonance known as *chiaroscuro*, refined breath management, and expressive nuance (Stark, 1999). These

principles have shaped vocal training in conservatories and universities worldwide and remain influential today.

Bel canto, however, is not a static or uniform method. Contemporary scholarship underscores the need to reinterpret bel canto in dialogue with modern voice science and contemporary performance requirements (Hoch, 2024). Studies of formant tuning, resonance strategies, and laryngeal registration provide new insights that can complement long-established exercises and techniques. By incorporating such findings, teachers can maintain the artistic integrity of bel canto while supporting vocal efficiency and long-term vocal health.

1.3 Pharyngeal-Voice (咽音) Pedagogy as a Complementary Resource

Alongside the Western lineage stands the rich but less widely systematized practice of pharyngeal-voice pedagogy. Deeply rooted in Chinese opera, folk traditions, and contemporary popular singing, pharyngeal-voice techniques emphasize resonant use of the pharyngeal cavity to produce bright timbres, achieve smooth register transitions, and project sound effectively. Acoustic and physiological analyses confirm the potential of these methods to strengthen vocal resonance and extend range while maintaining healthy technique (Sundberg, 1987; Titze, 2008).

Historical studies also reveal parallels between Chinese pharyngeal-voice and certain European practices. The nineteenth-century Italian concept of *voce faringea*, used by tenors to negotiate their upper register, shows striking physiological and acoustic similarities (Querns Langley, 2020). These convergences suggest that key vocal principles can transcend cultural boundaries and provide fertile ground for pedagogical integration.

1.4 Gaps in Current Curricula

Despite these possibilities, pharyngeal-voice pedagogy remains largely absent from mainstream vocal music curricula. Many conservatories and university programs focus almost exclusively on Western bel canto, with few opportunities for students to explore alternative timbral ideals or culturally embedded methods. This limited representation contrasts with contemporary music education's emphasis on culturally responsive and sustaining pedagogy, which seeks to validate diverse musical identities and incorporate multiple traditions into core instruction (Bond, 2017; Yoo & Kang, 2021). The omission of pharyngeal-voice practice from formal training represents both a pedagogical gap and an untapped opportunity for artistic and technical enrichment.

1.5 Purpose and Conceptual Orientation

This article addresses the need for broader pedagogical inclusion by proposing a conceptual framework for integrating pharyngeal-voice and bel canto practices in twenty-first-century vocal music education. Rather than presenting new empirical data, it draws together three significant strands of scholarship.

- Historical and analytical research on bel canto and pharyngeal-voice traditions provides insight into the technical and cultural evolution of both practices (Stark, 1999; Querns Langley, 2020).
- Contemporary voice science and pedagogy clarify the physiological mechanisms that support effective and healthy singing (Hoch, 2024).
- Intercultural and culturally sustaining music education literature highlights the value of curricula that reflect the diversity of global musical life (Bond, 2017; Yoo & Kang, 2021; Westerlund et al., 2022).

Based on these strands, the article develops a three-pillar conceptual model designed to guide integration:

- a) Vocal physiology focuses on aligning both traditions with current scientific understanding of resonance, registration, and vocal health.
- b) Pedagogical design addresses curriculum sequencing, instructional strategies, and teacher professional development needed for effective implementation.
- c) Transcultural aesthetics examines how singers and teachers can negotiate stylistic identities and expand their expressive resources.

1.6 Guiding Questions

The framework is structured to answer fundamental questions for contemporary vocal pedagogy. How can teachers respect multiple vocal heritages while ensuring sustainable technique? In what ways can pharyngeal-voice practices enhance bel canto training artistically and physiologically? How can integrated concepts be translated into curriculum design, teacher preparation, and assessment practices?

By presenting these questions and offering a conceptual response, the article seeks to stimulate dialogue among teachers, researchers, and curriculum planners. The framework offers both a theoretical foundation and a practical direction for those aiming to broaden and deepen vocal music education in the twenty-first century.

2. Literature Review

This section reviews scholarship on three interrelated domains essential for integrating pharyngeal-voice (咽音) pedagogy with Western bel canto training: (a) bel canto pedagogy, (b) pharyngeal-voice traditions and related voice-science research, and (c) intercultural and culturally sustaining music education. A final synthesis outlines opportunities and challenges for building an integrative framework.

2.1 Bel Canto Pedagogy: Historical Foundations and Contemporary Perspectives

Bel canto, literally “beautiful singing,” emerged in Italy during the seventeenth and eighteenth centuries and remained the dominant vocal ideal well into the nineteenth century. Classic pedagogical texts by Manuel García II and the Lamperti school describe its hallmarks: balanced *chiaroscuro* timbre, seamless register transition, precise breath management, and expressive ornamentation (Stark, 1999). These principles shaped European conservatories and spread globally, establishing bel canto as the foundation of modern operatic training.

Modern scholarship emphasizes that bel canto is a living tradition rather than a fixed method. Stark (1999) documents how historical treatises advocate flexible application of core principles rather than rigid exercise sequences. Hoch (2024) extends this perspective, proposing that bel canto be “reframed” through science-informed pedagogy. He highlights how research on resonance tuning and laryngeal registration can enhance the health and efficiency of bel canto singing without compromising its aesthetic ideals.

Other writers have similarly explored how bel canto concepts can inform a range of genres beyond opera, including music theatre and jazz, provided that the core physiological and acoustic principles are retained (Beauchamp, 2017). The adaptability of bel canto, coupled with its structured technical progression, makes it a robust platform for dialogue with other vocal traditions.

2.2 Pharyngeal-Voice Pedagogy and Related Voice Science

Pharyngeal-voice (咽音) techniques are integral to several East Asian vocal traditions, notably Chinese opera and folk singing. They involve shaping the pharyngeal cavity to enhance brilliance and carrying power, creating a tone that combines qualities of chest and head resonance. This technique allows singers to project effectively and navigate wide pitch ranges while maintaining vocal stability.

Although Western scholarship on pharyngeal-voice pedagogy is still developing, related physiological and acoustic studies provide valuable insights. Research on formant tuning and resonator shaping shows how specific vocal tract adjustments can reinforce harmonic overtones, yielding both greater projection and reduced vocal effort (Sundberg, 1987; Titze, 2008). Such findings help explain the acoustic basis of pharyngeal-voice resonance.

Historical investigations also reveal cross-cultural parallels. Querns Langley (2020) reconstructs the nineteenth-century Italian *voce faringea*, a specialized upper-register technique used by tenors. Her analysis shows striking similarities to Chinese pharyngeal-voice practice in both timbre and physiological execution, suggesting that certain resonance strategies may reflect universal principles of human vocal function rather than regionally isolated practices. Despite its potential, pharyngeal-voice pedagogy remains largely absent from formal curricula. Instruction often occurs informally or within traditional performance ensembles. Without systematic inclusion in higher education programs, many singers trained solely in Western traditions lack exposure to its technical and expressive resources.

2.3 Intercultural and Culturally Sustaining Music Education

A strong rationale for integrating diverse vocal traditions comes from the literature on intercultural and culturally sustaining music education. Bond (2017) argues that culturally responsive teaching affirms learners' identities and connects instruction to their lived musical experiences, thereby increasing relevance and equity. Yoo and Kang (2021) finds that intercultural learning enhances critical awareness and pedagogical flexibility among music students and teachers, preparing them to navigate diverse musical landscapes.

Westerlund et al., (2022) propose models of intercultural music teacher education that emphasize dialogue, reflexivity, and recognition of power relations in music-making. They caution that simple inclusion of global repertoire is insufficient; instead, meaningful integration requires rethinking conceptual frameworks and pedagogical structures.

Other studies reinforce this perspective. Rinde and Christophersen (2021) highlights the need for deep engagement with multiple sonic logics, rather than superficial multiculturalism, to achieve genuine intercultural understanding. Cain, Lindblom, and Walden (2013) provide practical strategies for embedding diverse musics in curriculum planning, stressing context-sensitive design and student agency. Collectively, these works advocate for pedagogies that are inclusive, dialogic, and transformative.

Integrating pharyngeal-voice and *bel canto* directly addresses these goals. It treats non-Western vocal knowledge not as an elective curiosity but as a core component of technical and aesthetic training, thereby exemplifying the "mutual learning" and structural equity envisioned in intercultural music education (Westerlund et al., 2022).

2.4 Synthesis and Challenges

The reviewed literature shows strong conceptual convergence in support of an integrative pedagogy. Bel canto offers a well-established and scientifically adaptable method for building vocal technique (Stark, 1999; Hoch, 2024). Pharyngeal-voice traditions provide complementary resonance strategies and distinctive timbres with historical analogues in European singing (Querns Langley, 2020). Intercultural music education provides a robust ethical and pedagogical rationale for combining these traditions in ways that respect cultural diversity and promote equitable participation (Bond, 2017; Yoo & Kang, 2021); Westerlund et al., 2022; Rinde & Christophersen, 2021).

At the same time, the literature points to significant challenges:

- **Terminological differences and conceptual translation.** Technical terms used to describe resonance and registration vary across traditions, complicating dialogue and curriculum design (Rinde & Christophersen, 2021).
- **Teacher preparation.** Few vocal educators are trained in both bel canto and pharyngeal-voice methods, creating a skills gap that intercultural teacher education programs must address (Westerlund et al., 2022).
- **Institutional norms and assessment.** Evaluation practices in classical vocal training often privilege Western timbral ideals, potentially disadvantaging students exploring hybrid techniques (Bond, 2017).
- **Physiological safety and sequencing.** Integrating novel resonance strategies must be grounded in evidence-based voice science to protect vocal health (Hoch, 2024; Titze, 2008).

These converging insights and challenges form the foundation for the conceptual model developed in the next section, which proposes three interrelated pillars—vocal physiology, pedagogical design, and transcultural aesthetics—to guide the integration of pharyngeal-voice and bel canto pedagogies.

3. Conceptual Framework: Integrating Pharyngeal-Voice and Bel Canto in Contemporary Vocal Music Education

3.1 Introduction to the Framework

The literature reviewed in Section 2 suggests strong grounds for an integrated approach to vocal pedagogy. Bel canto provides a historically robust and adaptable system for building technique that is compatible with contemporary voice science (Stark, 1999; Hoch, 2024). Pharyngeal-voice pedagogy contributes complementary resonance strategies and timbral options, with historical parallels in European practices such as the nineteenth-century *voce faringea* (Querns Langley, 2020). Intercultural and culturally sustaining music education provides the ethical and pedagogical rationale for bringing these traditions together in ways that support equity and artistic breadth (Bond, 2017; Yoo & Kang, 2021; Westerlund et al., 2022).

Figure 1 presents the three-pillar framework that organizes this integration. The top box states the overarching concept. The middle tier contains the three pillars that operationalize the concept. The bottom box lists the intended outcomes. All arrows point downward to indicate a top-to-bottom flow of influence from concept to pillars and from pillars to outcomes.

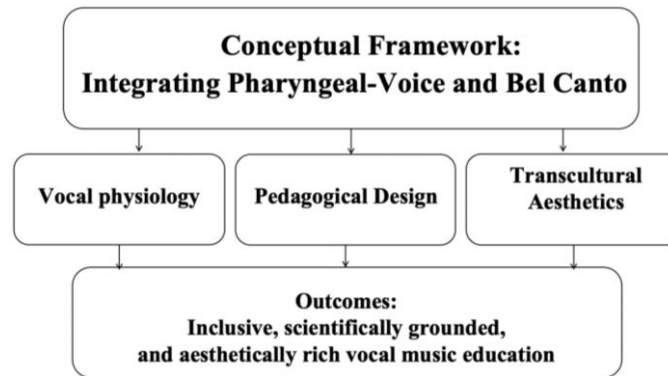


Figure 1: Three-pillar conceptual framework for integrating pharyngeal-voice (咽音) and bel canto in vocal music education.

3.2 Pillar One: Vocal Physiology

Vocal physiology anchors the framework because sustainable technique depends on a clear understanding of how sound is produced. Contemporary voice science describes the interaction of subglottal pressure, vocal fold vibration, and vocal tract shaping, and how these elements can be modulated to achieve timbral goals with efficiency (Sundberg, 1987; Titze, 2008). Within the bel canto tradition, the *chiaroscuro* ideal requires coordinated breath management and laryngeal stability to maintain evenness of tone and agility across registers (Stark, 1999). Within pharyngeal-voice practice, carefully shaped pharyngeal spaces are used to promote brilliance, carrying power, and secure upper-range transitions. Although historical descriptions use different images and terms, both approaches can be interpreted through the same physiological and acoustic principles.

The framework proposes that instruction should translate traditional imagery into verifiable mechanisms whenever possible. For example, teachers can link a student’s sensation of “narrowing” in pharyngeal-voice exercises to adjustments that influence upper-formant clustering, while relating bel canto “covering” strategies to laryngeal and tract configurations that support efficient resonance. Diagnostic listening, spectrographic snapshots, and guided reflection can help learners connect auditory results, kinesthetic sensations, and acoustic evidence in a coherent map of cause and effect (Hoch, 2024). In teacher preparation, shared scientific vocabulary enables dialogue between specialists from different traditions and helps to reduce confusion that arises from competing terminologies.

Sequencing is also part of the physiological pillar. Early instruction should stabilize fundamental skills that both traditions require, such as consistent breath management, posture, and relaxed onset. Once these are reliable, teachers can introduce bel canto exercises that cultivate even registration and legato, alongside carefully scaffolded pharyngeal-voice drills that explore controlled adjustments of the pharyngeal cavity. At advanced levels, learners experiment with repertoire that invites selective use of each strategy while maintaining healthy thresholds for load and intensity. Throughout, the physiological pillar functions as a safety guard and a translator that supports cross-traditional understanding.

3.3 Pillar Two: Pedagogical Design

The second pillar focuses on curriculum architecture, instructional methods, assessment, and teacher professional learning. A spiral curriculum is recommended so that students revisit core skills at increasing levels of complexity. In the first spiral, lessons establish shared foundations that both traditions value. In the second spiral, teachers introduce contrasting exercises, such as pairing *messa di voce* with pharyngeal-voice resonance drills to support register balance. In

later spirals, students apply integrated techniques to stylistically varied repertoire. This design follows the long-standing pedagogical principle of consolidating mastery before advancement and aligns with historical accounts that emphasize flexibility over rigid exercise sequences (Beauchamp, 2017; Stark, 1999).

Teacher capacity is central to pedagogical design. Intercultural music education research shows that successful integration depends on teachers who are willing to engage in reflective dialogue and continuous learning (Westerlund et al., 2022). Institutions can support capacity building through co-teaching models that pair Western classical specialists with experts in Chinese vocal traditions, through short micro-credential courses on intercultural vocal methods, and through structured peer observations that focus on student responses to integrated exercises. Communities of practice can document lesson designs, common challenges, and adaptations for different voice types, which will assist in transferring the framework across programs.

Assessment should reflect the aims of integration. Traditional juries often privilege a narrow set of timbral ideals, which can inadvertently discourage exploration of alternative sound palettes (Bond, 2017). The framework recommends multidimensional criteria that include technical accuracy, vocal health, stylistic versatility, and reflective engagement with cultural context. Rubrics can include short written or oral reflections in which students explain how they selected and combined techniques for a given piece. Portfolio assessments that combine performance recordings with reflective artifacts can capture growth across spirals and provide evidence for both technical and intercultural learning.

3.4 Pillar Three: Transcultural Aesthetics

The third pillar addresses the meanings of vocal sound and the ways in which singers negotiate identity through timbre, resonance strategies, and style. Intercultural education emphasizes that deep inclusion requires engagement with distinct aesthetic logics rather than surface-level repertoire mixing (Rinde & Christophersen, 2021). The framework therefore treats pharyngeal-voice and *bel canto* as co-equal knowledge systems that can be brought into dialogue without subsuming one under the other.

Practical implementation can include comparative listening seminars where students analyze recordings of both traditions, focusing on how different timbral ideals serve expressive aims and cultural narratives. Studio classes can stage interpretive experiments in which learners sing a passage using two alternative resonance approaches and evaluate communicative effects. Short reflective prompts can ask students to consider how personal history, language, and bodily habit shape their preferences. Kang's review of intercultural development highlights gains in critical awareness and empathy that follow from such sustained engagement (Yoo & Kang, 2021). In ensemble contexts, collaborative projects with traditional vocal artists or composers can place hybrid techniques in authentic performance situations and expand community understanding of vocal diversity. These activities align with Westerlund and colleagues' vision of music education as a site for intercultural citizenship that balances local traditions with global participation (Westerlund et al., 2022).

3.5 Interconnections among the Pillars

Although the pillars are described separately, they operate as a single system. The physiology pillar provides the evidence base that keeps experimentation safe and efficient. The pedagogical design pillar provides the structures through which students encounter, practice, and assess integrated techniques. The transcultural aesthetics pillar provides ethical and artistic orientation by asking why certain sounds are valued and how technical choices connect with

identity and context. A change in one pillar influences the others. For example, a new insight into resonance coupling from the physiology pillar may lead teachers to adjust sequencing in the pedagogical pillar, which in turn may expand aesthetic options considered in the transcultural pillar. Figure 1 captures this logic by placing the pillars under a single concept and by showing the downward flow from concept to practice to outcomes.

3.6 Outcomes and Pathways for Evaluation

The intended outcomes are inclusive, scientifically grounded, and aesthetically rich vocal music education. Inclusivity is demonstrated when students from varied cultural backgrounds see their vocal knowledge and sound ideals represented in core instruction, not only in elective contexts. Scientific grounding is demonstrated when teachers and students can explain techniques with reference to plausible physiological and acoustic mechanisms and when vocal load is monitored to maintain health. Aesthetic richness is demonstrated when learners can deploy contrasting timbres and resonance strategies with purpose and when they can justify choices in relation to repertoire, venue, language, and audience.

Programs can evaluate progress through a combination of performance assessments, reflective portfolios, and health indicators. Performance juries can include pieces that invite different resonance strategies. Portfolios can collect annotated spectrograms, lesson notes, and reflective essays. Health indicators can include logs of perceived effort, self-report measures of fatigue, and teacher observations of recovery patterns. Research studies can employ mixed methods to examine how the framework affects technical development, identity formation, and intercultural competence over time. Such evaluation will generate evidence that refines the framework and informs scaling to additional contexts.

3.7 Summary

The three-pillar framework provides a coherent route for integrating pharyngeal-voice and bel canto in contemporary vocal training. Vocal physiology supplies the common language and safeguards. Pedagogical design supplies the structures for learning and assessment. Transcultural aesthetics supplies the artistic and ethical compass. Figure 1 visualizes the model as a top-to-bottom system that links concept, practice, and outcomes. The framework is intended to be adaptable across institutions and to invite ongoing inquiry into how singers can develop healthy technique while engaging multiple vocal heritages with depth and respect.

4. Implications for Curriculum, Teacher Development, and Policy

This section translates the three-pillar framework into coordinated action at course, program, and institutional levels. It addresses curriculum design, assessment and quality assurance, teacher professional learning, policy and leadership, a staged implementation roadmap, risk management and ethics, and evaluation for continuous improvement.

4.1 Curriculum design and mapping

Curricula should align outcomes, teaching activities, and assessment so that integration of pharyngeal-voice and bel canto is coherent rather than additive. Constructive alignment offers a clear planning logic in which intended learning outcomes specify the competencies that teaching and assessment must then target (Biggs, 1999). Programs can map outcomes to the three pillars.

- Physiology outcomes may include evidence of safe resonance manipulation, register management, and load monitoring with reference to contemporary voice science.

- Pedagogical outcomes may include the ability to select, justify, and sequence exercises from both traditions for different voice types and learning stages.
- Aesthetic outcomes may include reflective articulation of timbral and stylistic choices in relation to repertoire, language, venue, and audience.

A spiral curriculum supports gradual integration. In the first spiral, foundations common to both traditions are emphasized, such as breath management, posture, and basic resonance awareness. In the second spiral, paired tasks introduce contrasting strategies, for example *messa di voce* alongside guided pharyngeal-resonance drills, followed by short reflections that connect sensations to acoustic results. In the third spiral, students apply integrated techniques to varied repertoire, including projects that invite stylistic hybridity. Course outlines should show where each outcome is taught, practiced, and assessed, and how the design links to the framework visualized in Figure 1.

4.2 Assessment and quality assurance

Assessment should provide evidence of learning across all three pillars and avoid privileging a single timbral ideal. Formative assessment principles are central because students need timely, actionable information to calibrate technique while avoiding overuse and strain (Sadler, 1989; Black & Wiliam, 2010; Hattie & Timperley, 2007). Studio feedback cycles can include targeted comments on physiological efficiency, pedagogical decision making, and aesthetic reasoning. For summative assessment, criterion-referenced rubrics should articulate indicators for technical control, vocal health, stylistic versatility, and intercultural reflection. Research in music performance assessment shows that rater calibration and analytic judging improve fairness and interpretability, while statistical monitoring can surface severity patterns and bias for remediation (Wesolowski, Wind, & Engelhard, 2015; Russell et al., 2003). Programs can adopt procedures such as double-marking of juries, short rater-norming using exemplars, and periodic analysis of rating data to monitor reliability and identify drift.

Quality assurance policies should require explicit alignment among outcomes, tasks, and rubrics, and should encourage the collection of multi-source evidence. Portfolios that combine performance recordings, annotated spectrogram snapshots, and brief reflective commentaries can capture growth across spirals and provide a stronger validity argument for decisions about progression.

4.3 Teacher professional learning

Integration depends on teacher learning. Reviews of professional development identify core features associated with positive impact, including content focus, active learning, coherence with institutional priorities, sufficient duration, and collective participation (Desimone, 2009). Change models indicate that shifts in teachers' beliefs often follow visible changes in student outcomes rather than precede them, which supports iterative pilot cycles with structured evidence sharing (Guskey, 2002).

Institutions can create co-teaching arrangements that pair Western classical specialists with experts in Chinese vocal traditions. Short micro-credential courses can introduce the physiological, pedagogical, and aesthetic foundations of integration. Professional learning communities can document lesson designs, discuss student responses to integrated exercises, and analyze performance and portfolio evidence. Intercultural music teacher education research emphasizes dialogic practice and reflexivity, which suggests that teacher learning should include structured reflection on power, legitimacy, and assessment norms in vocal artistry (Westerlund et al., 2022).

4.4 Policy and leadership

Policy should signal that multiple vocal heritages are part of core training. Program specifications can name pharyngeal-voice and bel canto as complementary knowledge systems and state explicit learning outcomes for each pillar. Admissions and progression policies can recognize stylistic diversity in audition and jury design. Equity-oriented frameworks in education argue that programs should not only respond to students' cultural resources but also sustain them over time, which justifies structural support for hybrid practice rather than one-off electives or add-ons (Ladson-Billings, 1995; Paris, 2012).

Leadership actions may include establishing a standing curriculum group responsible for the framework, allocating workload credit for co-teaching and rater-norming, and providing funds for artist residencies and intercultural collaborations. Policy should also include health safeguards, for example recommended limits on weekly vocal load in high-intensity modules and required rest planning during production periods, with reference to current voice science.

4.5 Implementation roadmap

A staged approach allows programs to build capacity, monitor fidelity, and adjust based on evidence. Implementation research shows that outcomes depend strongly on the quality and consistency of enactment, not only on the design of an innovation (Durlak & DuPre, 2008). Measurement of fidelity and core components helps teams learn which elements must be held constant and which can adapt to local context (Century, Rudnick, & Freeman, 2010). Sustainable scale requires depth of teacher learning, ownership, and system supports, rather than simple replication across more sites (Coburn, 2003).

Pilot phase. Begin with a small number of required courses. Specify core components aligned to the three pillars and identify adaptable elements. Use fidelity tools to document what was taught and how students responded, and collect performance, reflection, and vocal health indicators for before–after comparison (Century et al., 2010; Durlak & DuPre, 2008).

Scale-up phase. Extend to studio classes and ensembles once pilot data show acceptable fidelity and outcomes. Attend to organizational supports such as timetabling for co-teaching, time for rater norming, and teacher learning communities. Evidence from scale literature emphasizes the need to build capacity and coherence, not only coverage (Coburn, 2003).

Institutionalization phase. Embed requirements for constructive alignment, rater calibration, and intercultural reflection in program handbooks and annual review cycles. Continue fidelity checks to prevent drift and use brief improvement cycles to test refinements in authentic settings (Century et al., 2010; Durlak & DuPre, 2008).

4.6 Risk management and ethics

Integration introduces risks that require proactive management. Physiological risks include overuse and inefficient phonation during exploratory practice. Voice health literature identifies mechanisms and symptoms of vocal fatigue and outlines strategies for load management and recovery, including periodization, hydration, and careful progression of intensity and duration (Sataloff, 2017; Welham & Maclagan, 2003; Titze, 2008). Educators should incorporate short, distributed practice with monitoring of perceived effort and comfort, along with regular checkpoints that use shared physiological language from the framework.

Pedagogical and cultural risks include confusion from mixed terminology and the possibility of tokenistic inclusion that leaves underlying hierarchies untouched. A shared glossary that

links imagery from each tradition to plausible acoustic and anatomical explanations can reduce ambiguity and support informed transfer across contexts (Hoch, 2024). Ethical guidance from culturally responsive and sustaining pedagogy emphasizes honoring students' cultural and linguistic resources as assets in core learning, which argues for substantive integration rather than peripheral add-ons (Bond, 2017; Paris, 2012). Comparative listening tasks and reflective prompts can surface assumptions about timbre and style, while assessment criteria that explicitly credit intercultural reasoning and stylistic versatility help counter hidden biases.

Programs should also consider staff wellbeing and professional integrity. Structured co-teaching, transparent workload recognition, and professional learning communities reduce individual burden and support collaborative responsibility for student outcomes. When new techniques are introduced, informed consent principles apply in educational settings. Students should be told the rationale, intended benefits, potential discomforts, and available alternatives, and they should have safe ways to pause or adjust activities without academic penalty (Welham & Maclagan, 2003; Titze, 2008).

4.7 Evaluation and continuous improvement

Evaluation should triangulate performance evidence, reflective data, and health indicators to support decisions about progression and program quality. Formative assessment has a large positive effect on learning when it provides clear criteria, timely feedback, and opportunities for students to act on that feedback (Black & Wiliam, 2010; Hattie & Timperley, 2007). Rubrics should articulate indicators across the three pillars and make expectations visible. Rater calibration and analytic judging improve fairness and interpretability in performance assessment, while statistical monitoring can surface severity patterns and bias for remediation (Wesolowski et al., 2015; Russell et al., 2003).

Validity should be treated as an argument that integrates multiple sources of evidence about score meaning and use. That includes internal structure, relationships to other variables, and consequences of decisions, rather than a single coefficient (Kane, 2013; Sadler, 1989). Programs can implement recurring review cycles that examine rubric analytics, inter-rater agreement, student portfolios, and health indicators, followed by small tests of change in tasks or feedback routines. Continuous improvement research underscores the value of iterative, evidence-guided adjustment in authentic settings to achieve reliability and equity at scale (Durlak & DuPre, 2008; Coburn, 2003). Over time, these cycles should inform policy, curriculum mapping, and professional learning priorities that support the framework represented in Figure 1.

5. Conclusion and Directions for Future Research

This article proposed a conceptual framework for integrating pharyngeal-voice and bel canto pedagogies in contemporary vocal music education. The framework rests on three interrelated pillars. Vocal physiology provides a common evidence base for safe and efficient sound production. Pedagogical design supplies curriculum structures, instructional routines, assessment practices, and teacher learning processes that translate concepts into daily studio and ensemble work. Transcultural aesthetics offers the artistic and ethical orientation needed to value multiple vocal heritages and to cultivate flexible stylistic identities. Together these pillars form a coherent pathway from concept to practice to outcomes, as summarized in Figure 1.

The review of scholarship suggests that integration is both desirable and feasible. Bel canto offers durable technical principles that can align with current voice science and health considerations (Stark, 1999; Hoch, 2024; Titze, 2008). Pharyngeal voice contributes resonance strategies and timbral resources with historical analogues in European practice and with clear pedagogical potential (Querns Langley, 2020). Intercultural and culturally sustaining perspectives provide the rationale for positioning both traditions as co-equal sources of knowledge in core instruction, rather than as separate or hierarchical options (Bond, 2017; Yoo & Kang, 2021; Westerlund et al., 2022). The resulting framework is adaptable across institutional contexts and responsive to the plural musical realities that singers navigate today. At the same time, the paper identified boundary conditions. Terminology differs across traditions, which can obscure shared physiological mechanisms. Teacher capacity is uneven, and few programs currently prepare faculty to work fluently with both approaches. Assessment practices may privilege narrow timbral ideals and therefore limit students' willingness to experiment. These constraints reinforce the need for aligned curriculum, rater training, and structured professional learning communities that can build shared language and practice over time.

Future research should move from conceptual synthesis to systematic testing. The following agenda is proposed.

- a) **Technical efficacy and vocal health.** Conduct experimental or quasi-experimental studies that compare integrated instruction with conventional conditions on measures such as acoustic indices, perceived effort, range stability, and recovery patterns. Include longitudinal tracking to examine durability and safety.
- b) **Learning processes in the studio.** Use design-based and mixed-methods studies to analyze how specific sequences of bel canto and pharyngeal-voice tasks affect skill acquisition for different voice types and experience levels. Capture interactions among sensation, sound, and acoustic feedback.
- c) **Assessment validity and fairness.** Evaluate analytic rubrics that include technical control, vocal health, stylistic versatility, and intercultural reasoning. Study rater calibration protocols and model rater effects to improve fairness in juries and auditions.
- d) **Identity, agency, and transfer.** Examine how engagement with multiple resonance strategies influences students' artistic identities, repertoire choices, and communication with audiences. Investigate transfer across genres and languages.
- e) **Teacher learning and program change.** Analyze co-teaching models, micro-credential pathways, and professional learning communities that support integration. Document conditions that enable scale with fidelity, including workload recognition and leadership routines.
- f) **Community and cultural impact.** Explore collaborations with traditional vocal artists, composers, and community ensembles. Study how hybrid practices influence audience understanding and cultural participation.

Methodologically, research should combine quantitative indicators with qualitative analyses of rehearsal talk, reflective journals, and lesson artifacts. Portfolios that include performance recordings, annotated spectrograms, and brief reflective commentaries can serve both as assessment evidence and as research data. Ethical attention to student wellbeing and informed consent is essential, especially when exploring new technical pathways.

In summary, the framework offered here provides a practical and theoretically grounded route to broaden vocal technique and enrich artistic expression. It honors the depth of bel canto, recognizes the distinctive contributions of pharyngeal-voice, and situates both within an

intercultural vision of music education. By aligning physiology, pedagogy, and aesthetics, programs can cultivate singers who are healthy, versatile, and culturally responsive. Continued inquiry and careful implementation will refine this model and help institutions realize its potential for learners, teachers, and communities.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this study.

References

- Beauchamp, M. E. (2017). *The application of bel canto concepts and principles to trumpet pedagogy and performance* (Doctoral dissertation, Louisiana State University). LSU Scholarly Repository. https://doi.org/10.31390/gradschool_disstheses.3474
- Biggs, J. (1999). *Teaching for quality learning at university: What the student does*. SRHE and Open University Press.
- Black, P., & Wiliam, D. (2010). Inside the black box: Raising standards through classroom assessment. *Phi delta kappan*, 92(1), 81–90. <https://www.researchgate.net/publication/44836144>
- Bond, V. L. (2017). Culturally responsive education in music education: A literature review. *Contributions to Music Education*, 42, 153–180. <https://www.jstor.org/stable/26367441>
- Cain, M., Lindblom, S., & Walden, J. (2013). Initiate, create, activate: Practical solutions for making culturally diverse music education a reality. *Australian Journal of Music Education*, (2), 79–97. <https://search.informit.org/doi/10.3316/informit.194947961909154>
- Century, J., Rudnick, M., & Freeman, C. (2010). A framework for measuring fidelity of implementation: A foundation for shared language and accumulation of knowledge. *American Journal of Evaluation*, 31(2), 199–218. <https://doi.org/10.1177/1098214010366173>
- Coburn, C. E. (2003). Rethinking scale: Moving beyond numbers to deep and lasting change. *Educational Researcher*, 32(6), 3–12. <https://doi.org/10.3102/0013189X032006003>
- Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181–199. <https://doi.org/10.3102/0013189X08331140>
- Durlak, J. A., & DuPre, E. P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology*, 41, 327–350. <https://doi.org/10.1007/s10464-008-9165-0>
- Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching*, 8(3), 381–391. <https://doi.org/10.1080/135406002100000512>
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81–112. <https://doi.org/10.3102/003465430298487>
- Hoch, M. (2024). Reframing bel canto in the twenty-first century: Dovetailing tradition with science-informed pedagogy. *Journal of Singing*, 80(4), 417–427. <https://doi.org/10.53830/sing.00024>

- Kane, M. T. (2013). Validating the interpretations and uses of test scores. *Journal of Educational Measurement*, 50(1), 1–73. <https://doi.org/10.1111/jedm.12000>
- Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal*, 32(3), 465–491. <https://doi.org/10.3102/00028312032003465>
- Paris, D. (2012). Culturally sustaining pedagogy: A needed change in stance, terminology, and practice. *Educational Researcher*, 41(3), 93–97. <https://doi.org/10.3102/0013189X12441244>
- Querns Langley, K. E. (2020). *Reconstructing the tenor “pharyngeal voice”: A historical and practical investigation* (Doctoral thesis, Royal College of Music). <https://researchonline.rcm.ac.uk/id/eprint/1554/>
- Rinde, F. B., & Christophersen, C. (2021). Developing an understanding of intercultural music education in a Nordic setting. *Nordic Research in Music Education*, 2(2), 5–27. <https://doi.org/10.23865/nrme.v2.2772>
- Russell, J. A., Bachorowski, J.-A., & Fernández-Dols, J.-M. (2003). Facial and vocal expressions of emotion. *Annual Review of Psychology*, 54(1), 329–349. <https://doi.org/10.1146/annurev.psych.54.101601.145102>
- Sadler, D. R. (1989). Formative assessment and the design of instructional systems. *Instructional Science*, 18(2), 119–144. <https://doi.org/10.1007/BF00117714>
- Sataloff, R. T. (2017). *Professional voice: The science and art of clinical care* (3rd ed., 3 vols.). Plural Publishing.
- Stark, J. (1999). *Bel canto: A history of vocal pedagogy*. University of Toronto Press.
- Sundberg, J. (1987). *The science of the singing voice*. Northern Illinois University Press.
- Titze, I. R. (2008). The human instrument. *Scientific American*, 298(1), 94–101. <https://doi.org/10.1038/scientificamerican0108-94>
- Welham, N. V., & Maclagan, M. A. (2003). Vocal fatigue: Current knowledge and future directions. *Journal of Voice*, 17(1), 21–30. [https://doi.org/10.1016/S0892-1997\(03\)00033-X](https://doi.org/10.1016/S0892-1997(03)00033-X)
- Wesolowski, B. C., Wind, S. A., & Engelhard, G., Jr. (2015). Rater fairness in music performance assessment: Evaluating model–data fit and differential rater functioning. *Musicae Scientiae*, 19(2), 147–170. <https://doi.org/10.1177/1029864915589014>
- Westerlund, H., Kallio, A. A., & Karlsen, S. (2022). In H. Partti (Ed.), *Visions for intercultural music teacher education*. Springer. <https://doi.org/10.1007/978-3-030-21029-8>
- Yoo, H., & Kang, S. (2021). Teaching as improvising: Preservice music teacher field experience with 21st-century skills activities. *Journal of Music Teacher Education*, 30(3), 54–68. <https://doi.org/10.1177/10570837211021373>