

A Study on Elements of Vocal Fatigue Resistance Training



Participants: Primary Music Teachers – Specialists in singing with experience in both group and individual instruction.

- Snowball sampling
- Surveys with the inclusion criteria to recruit for interviews:

“Have you ever engaged in intentional voice work to enhance your vocal resistance or alleviate any symptoms of vocal fatigue?”

Reasons and Justifications



Literature

- Voice disorders and career changes persist (Roy et al., 2004).
- There is a gap in effective solutions to reduce, prevent, and manage vocal fatigue.
- Vocal pedagogy has focused on acquiring vocal skills rather than training for speaking vocal demands (Ruben, 2014).
- There remains uncertainty about the long-term reduction of vocal fatigue among music teachers (Moreno, Calvache, and Canor-Cutiva, 2022).

Insider Researcher

- As a primary school music teacher, I understand the challenges associated with the vocal demands of this profession and their impact on vocal health in the environment.
- As a singing teacher, I believe in effectively resolving vocal fatigue.

Ethical Considerations

- ✓ Research began with the UWTSD Ethics Form approval.
- ✓ Participant Consent forms
- ❖ Data handling and processing: ensuring anonymity in data storage and interpretation.
- ☐ Observations of teachers' voices: parents have been notified.

Avoiding bias

- Inductive Thematic Analysis applied to the risk of pre-analysing respondents' interpretations.
- Reflect in, on, and through action (Schön, 1983).
- Reflective journal.

METHODS

AND METHODOLOGY

STRUCTURE



SURVEY



SYSTEMATIC LITERATURE REVIEW



INTERVIEWS



FOCUS GROUPS omitted



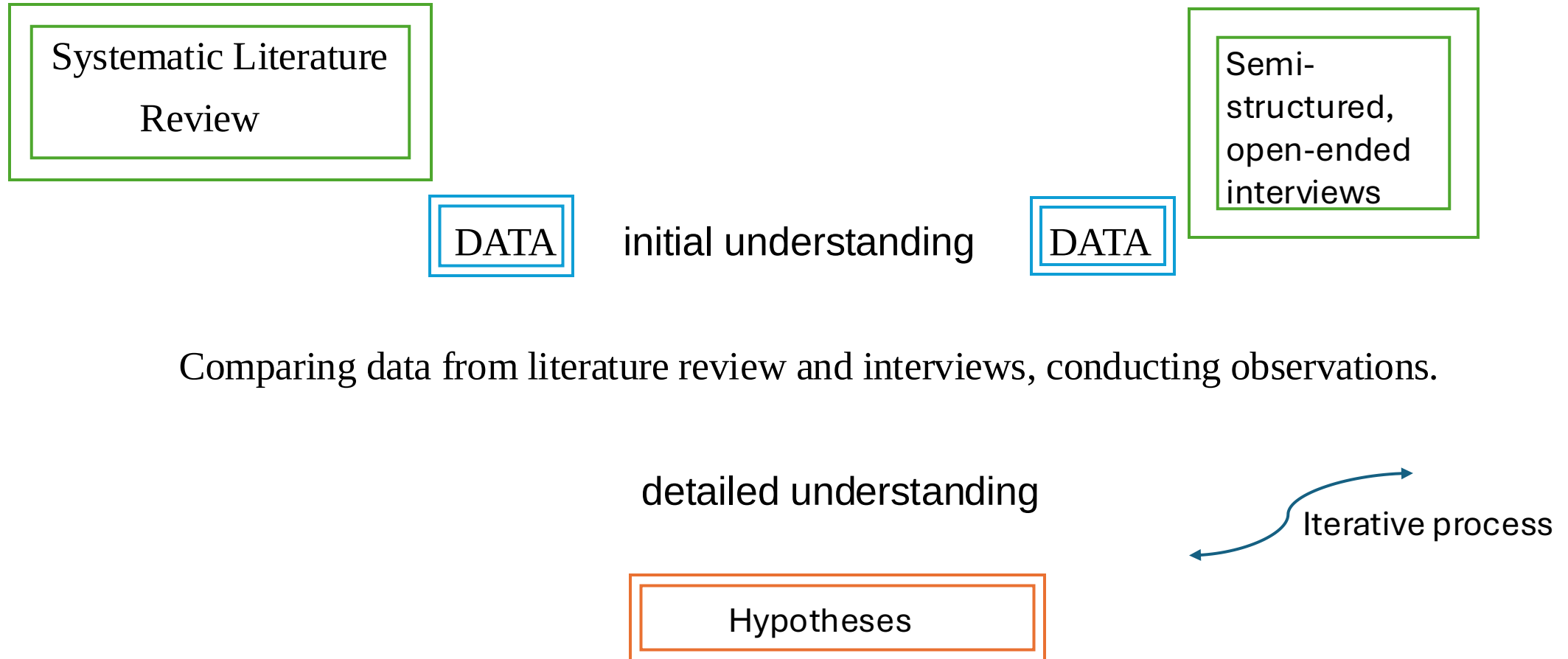
OBSERVATIONS



GROUNDED THEORY APPROACH - Conclusions

Grounded Theory Approach

Hypotheses regarding the most effective strategies were based on inductive axial coding.



Summarised strategies from all data-gathering methods may serve as a foundation for crafting exercises.

Systematic literature review

As parallels between the principles of exercise science (Nesbitt, 2023) emerged in the latest studies, I concentrated on the internal processes of vocal fatigue.

FINDINGS

... breathwork

A significant number of fibres with proven fatigue-resistant motor units were identified in the thyroarytenoid muscle (Tellis, Thekdi, and Rosen, 2004). This muscle operates on a slow-contraction basis while necessitating increased oxygen intake.

...frequency and intensity

Sale (1986) noted that healthy processes within muscles, developed by upregulating training, can be lost if frequency and intensity are not maintained over time.



Interviews

I focused on gathering data on reducing vocal fatigue and the long-term effects of intentional voice work.

Findings and Thematic Analysis Topics

- Class Management
- Vocal Rest
- SOVT's
- Breathwork
- Opinions of VFRT (Vocal Fatigue Resistance Training)

Passive strategies support active strategies in music teachers' vocal fatigue resistance training.

Elements of Vocal Fatigue Resistance Training

=inductive reasoning=

Breathwork

📖 Muscles cannot function without an oxygen intake.
(Titze and McCabe, 2002; Nanjundeswaran, VanSwearingen, and Abbott, 2016).

SOVT's

Recovery, prevention, strengthening, and flexible functionality for daily teacher's work performance.

Vocal Rest and Cool Down

- Muscle to be rested before contracting again.
- Balancing the neurological processes in muscle tissues.

Class Management

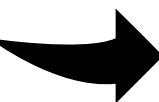
To support the controlled time of Vocal Rest.

Vocal Therapy and Vocal Physiotherapy

📖 Building safe speech foundations
(Stemple et al., 2017; Behrman and Haskell, 2019; Guzman et al., 2023).

Emotional Control

For voice response and muscle neuro-internal processes.



Breathwork

“The correct breathing has helped me significantly in practical life. I work with many children with challenging behaviour as well as choirs simultaneously, and I have no problem using my voice effectively with dynamics without harming it. Of course, there are times when I am not focused, and then my voice gets a little tired. However, it has never happened that I couldn’t sing the next day or lose my singing or spoken voice. I don’t feel vocal fatigue” (Participant 12). 

 Participant 4 mentions Strelnikova’s Breathing Gymnastics: “It helps to preserve the voice. It redirects the air to the correct areas of the body for speaking and singing.”



SOVT's

Participant 11: "I can say I'm doing this regularly. I do this on my own, ad hoc. I'm in the hall, doing lip trills. When I'm walking, during a break, while I'm looking for kids, I do that. And I talk better when I walk into the classroom. I feel stronger. The muscles, too. We need to warm up our voices. It doesn't matter whether you're singing or talking. Teachers' working hours are very challenging because we sometimes have to push our voices when something is happening. And we don't prepare our voices for this."

Participant 8: "Narrow straws truly broaden everything inside. So, instead of contracting, you achieve a wider space, and then you must learn how to maintain that space. Work gradually and experience the same sensation with various vowels, amusing sounds, and combinations."



Vocal Therapy and Physiotherapy



Participant 7

“When I first started teaching in the classroom, I faced significant challenges. Eventually, I became more resilient to these issues. For a few years, I managed quite well despite the extreme tension. Throughout those two years, I performed satisfactorily. However, during the third year, the intensity increased significantly. I began to experience muscle tension dysphonia, and none of the strategies—whether SOVT or voice rest—provided relief; it felt futile.”

Observations

Emotional Control

“Firstly, recognise the emotion in your voice that could impact children and consider why that emotion is present - perhaps it’s your last lesson, and you are tired too. Then, make a switch and regain the control” (Participant 5).

Class Management

Voice work is based on the control of vocal demand and response.



Results, Conclusions and Future Studies



Hypothesis

Voice therapies are regarded as effective and appropriate for vocal fatigue resistance training; however, interviews have highlighted their limitations in practical applications. Passive strategies support the use of active strategies throughout vocal fatigue resistance training, but they cannot foster vocal endurance on their own.

Future Studies

- Voice therapies application in the context of fatigue resistance training.
- Active, vocal fatigue strategies applications.
- Transfer of the knowledge, training and practices to other occupational voice users (non-vocally trained).

VOCAL FUNCTION EXERCISES

THE ACCENT METHOD

RESONANT AND WATER RESISTANCE
VOICE THERAPY (Guzman et al., 2023)

What I learned, discovered & space for improvement

- ✓ A contribution to my own professional practice and to the vocal health of my colleagues.
- ❖ Retrospective thinking to derive results.
- Future project - explore these elements of active, vocal fatigue resistance training deeply.
- Observations – recruit more participants with experience in resolving vocal fatigue.



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