

How to Use Good Vocal Behaviors in the Classroom: An Instructional Videotape for Teachers

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The incidence of vocal phonotrauma is underestimated in the teaching population. Teachers are susceptible to vocal problems because of occupational, environmental, and physical factors. A descriptive research design examined whether teachers were aware of vocal problems, prevention, and remediation. A needs assessment indicated that a vocal hygiene instructional videotape would be useful. Instrumental assessments administered to teachers included pre- and post-questionnaires and the Voice Handicap Index. Speech pathologists served as expert raters to determine if the videotape had value as a preventative tool. An instructional videotape was created to assess teachers' awareness and identification of vocal problems, occupational voice concerns, and vocal remediation. A non-parametric analysis using Wilcoxon's matched-pairs signed-ranks demonstrated a significant difference between pre- and post- scores. The results indicated that an instructional videotape increased teachers' awareness about voice misuse/overuse and treatment options. This videotape could be used for training, therapy and promote a healthier work environment.

Introduction

Teaching is a vocally demanding profession that places teachers at risk for the development of voice problems. Teachers are thrust into the classroom with little knowledge of vocal hygiene, vocal awareness, vocal symptomology and vocal overloading factors. These occupational hazards contribute to a high incidence of vocal phonotrauma among teachers. Many researchers found that professional educators experience voice disorders more than the general population (Mattiske, Oates & Greenwood, 1998; Russell, Oates & Greenwood, 1998; Sala, Laine, Simberg, Pentti & Suonpää, 2000; Smith, Lemke, Taylor, Lester-Kirchner & Hoffman, 1998; Vilkmán, 2000). Elementary school teachers are more susceptible to voice problems than the general population because of their frequent and constant voice use. Teachers often speak over ambient noise during lunchroom, hall, playground, and bus duties. The primary purpose of this study was to increase teachers' awareness of vocal misuse and overuse so that teachers would be cognizant of potential resources available to them. Another purpose of this study was to determine whether the concept of an instructional videotape on vocal hygiene would be positively received by elementary school teachers.

Materials and Method

Subjects

Elementary school teachers and school-based speech-language pathologists (SLPs) voluntarily participated. The teachers (N=54) criteria for participation included prior or present history of vocal problems or at least one vocal symptom. The SLPs required one year of experience in the field and a satisfactory self-rating on the Needs Assessment Questionnaire (NAQ). Of 85 SLPs only 67 qualified. Only 23 of the 116 SLPs completed the NAQ during the implementation.

Needs Assessment Questionnaires for Teachers & SLPs

The teacher NAQ was derived from vocal symptoms, vocal problems, and hygiene programs; it consisted of 13 yes/no responses, six open-ended questions, and two comment sections. The SLP NAQ was based on voice evaluation and treatment experience, competency level in voice, knowledge of vocal prevention, and receptiveness to a vocal hygiene videotape. The NAQ consisted of 14 yes/no responses, three 5-point scaled responses, two open-ended questions, and a comment section.

Prequestionnaire (PreQ) and Postquestionnaire (PostQ) for Teachers and the PostQ for SLPs

Part 1 of the PreQ examined each teachers' exposure, training, and experience with speech pathology. Part 2 examined awareness and knowledge of voice disorders and preventative measures. The SLP PostQ examined whether the videotape would be a beneficial tool for increasing teacher awareness of vocal overuse and misuse (see Appendixes A and B for Elementary School Teacher Voice PreQ and PostQ).

Voice Handicap Index

The Voice Handicap Index (VHI) provided information regarding each teacher's vocal problems (Jacobsen et al., 1997). The VHI is comprised of 30 voice self-rating questions: 10 with emotional content, 10 with functional content, and 10 with physical content.

Preventative Instructional Videotape

A state-of-the-art instructional videotape entitled, *How to Use Good Vocal Behaviors in the Classroom: An Instructional Videotape for Teachers* was designed and created. Select audio clips of voice qualities were used from Dworkin and Meleca's (1997) *Vocal Pathologies: Diagnosis, Treatment, and Case Studies* compact discs. Blausen Medical Communications, Inc. was hired to develop a 3-D animation segment of the larynx. The videotape featured the following segments: 1) How voice is produced, 2) How elementary school teachers could misuse or overuse their voices, 3) What stressors affect vocal health, and 4) What elementary school teachers could do to avoid voice problems.

Procedures

An Institutional Review Board (IRB) application was approved and consents were attained.

Elementary School Teacher and Speech-language Pathologists

The NAQ was administered to 71 teachers at four school sites. Qualified teachers completed a voice PreQ, viewed a videotape, and immediately completed the voice PostQ. The VHI was administered as a supplement (Jacobsen et al., 1997). The NAQ was distributed to SLPs at a district meeting where they viewed the videotape and completed a questionnaire.

Statistical Analysis

Teachers and SLPs

A within-subject design was selected using the Wilcoxon's matched-pairs signed-ranks test of significance. To determine the reliability of the teacher voice PostQ, the Cronbach's Alpha method (e.g., 1= very likely to 5= never) was employed. Descriptive statistics and two levels

(e.g., behavioral and attitudinal) of the four levels of Kirkpatrick’s model were used for analysis. The ratings of the SLPs and the teachers NAQ were collected and tabulated in the same way. Reliability of the SLP voice PostQ was determined using the Cronbach’s Alpha.

Results

Teachers

The elementary school teachers completed a voice PreQ as well as Jacobsen’s (1997) VHI, viewed the videotape, and immediately completed a voice PostQ. The data revealed that only 22% of the 54 qualifying teachers presented with vocal concerns. Table 1 represents an analysis of the VHI. Twelve percent of the teachers rated their voice with emotional, functional, or physical subscale characteristics. The VHI physical subscale was rated at the highest level of vocal concern with 24% of teachers reporting physical concerns.

Table 1. Analysis of Voice Handicap Index (N = 49)

Subscales	Responses	<i>f</i>	<i>P</i>
Emotional	490	21	4.3
Functional	490	39	8.0
Physical	490	119	24.3
Global	1470	179	12.2

Note. Global section is defined as a combination of emotional, function, and physical subscales.

The Wilcoxon test was used to analyze the elementary school teachers’ voice PreQ’s and PostQ’s. There was a significant difference between the scores of both questionnaires ($Z = -6.08, N = 54, p < 0.01$) and 48 of the 54 subjects or 89% showed improvement. The Cronbach Alpha was used to analyze the reliability of the teacher PreQ’s and PostQ’s. It was statistically significant at .88. Questions 12-18 of the PostQ were used to determine reliability and to examine whether teachers thought that the instructional videotape was a valuable tool. Table 2 illustrates that 97% of the teachers found this videotape to be an effective tool to address voice problems.

Teachers indicated that the videotape was a “useful” or a “very useful” preventative tool. All the teachers were “likely” or “very likely” to implement at least one preventative method.

Table 2. Elementary school teacher rating of the instructional videotape for analysis on the voice postquestionnaire

Question	Scale					Total
	1	2	3	4	5	
12						
Frequency	0	0	2	29	23	54
Percentage	0	0	3.7	53.7	42.6	100
13						
Frequency	0	1	1	26	26	54
Percentage	0	1.9	1.9	48.1	48.1	100
14						
Frequency	0	0	1	30	23	54
Percentage	0	0	1.9	55.6	42.6	100
15						
Frequency	0	0	2	34	18	54
Percentage	0	0	3.7	63	33.3	100
16						
Frequency	0	0	0	21	33	54
Percentage	0	0	0	38.9	61.1	100
17						
Frequency	0	0	2	21	31	54
Percentage	0	0	3.7	38.9	57.4	100
18						
Frequency	0	0	7	21	26	54
Percentage	0	0	13	38.9	48.1	100

Note. Judgments were made on 5-point scales. Questions 12-15, Scale 1 = *poorly* to 5 = *extremely well*. Question 16, Scale 1 = *not useful* to 5 = *very useful*. Questions 17-18, Scale 1 = *never* to 5 = *very likely*.

Results

SLP

A Cronbach Alpha of .84 was statistically significant and it substantiated that the PostQ for SLPs was a reliable measure. Questions 1-9 of the PostQ examined whether SLPs found the videotape valuable for educators. Table 3 illustrated that 98% of SLP's thought this videotape taught "well" or "extremely well" how voice was produced, how teachers misused or overused their voices, how voice stressors were recognized, and how voice problems could be prevented.

Table 3. SLP rating of the instructional videotape for analysis on the voice postquestionnaire

Question	Scale					Total
	1	2	3	4	5	
1						
Frequency	0	0	0	12	11	23
Percentage	0	0	0	52.2	47.8	100
2						
Frequency	0	0	0	9	14	23
Percentage	0	0	0	39.1	60.9	100
3						
Frequency	0	0	0	7	16	23
Percentage	0	0	0	30.4	69.6	100
4						
Frequency	0	0	2	12	9	23
Percentage	0	0	8.7	52.2	39.1	100
5						
Frequency	0	0	0	6	17	23
Percentage	0	0	0	26.1	73.9	100
6						
Frequency	0	0	0	6	17	23
Percentage	0	0	0	26.1	73.9	100
7						
Frequency	0	0	0	5	18	23
Percentage	0	0	0	21.7	78.3	100
8						
Frequency	0	0	3	10	10	23
Percentage	0	0	13	43.5	43.5	100
9						
Frequency	0	0	0	7	16	23
Percentage	0	0	0	30.4	69.6	100

Note. Judgments were made on 5-point scales. Questions 1-4, Scale 1 = *poorly* to 5 = *extremely well*.

Questions 5-7, Scale 1 = *not useful* to 5 = *very useful*. Questions 8-9, Scale 1 = *never* to 5 = *very likely*.

Responses to questions 5-7 indicated that all SLPs found the videotape to be a “useful” or “very useful” tool. Responses to questions 8-9 revealed that 94% of SLPs reported that teachers would “likely” or “very likely” implement at least one technique and recommend the videotape. Questions 1-7 analyzed the SLPs’ reactions to the videotape. The majority of the

SLPs rated favorable responses to the videotape. Questions 8 and 9 analyzed the SLPs' behavioral changes after viewing of the videotape. The majority of the SLPs indicated that they would "likely" or "very likely" use at least one preventative technique.

Discussion

Discussion and Implications

It was evident that the videotape was a valuable preventative tool as demonstrated by the significance between the PreQ and PostQ scores of the teachers and the PostQ scores of the SLPs. The SLPs further substantiated the need for this preventative vocal hygiene tool. The results of the SLPs PostQ confirmed that the videotape did increase teachers' awareness of vocal problems and that remediation was available. This study indicated that 22% of the teachers perceived they did not have any voice problems, however, the results of the NAQ indicated otherwise. Teachers were aware of symptomology, but they did not believe the symptoms were indicative of voice problems. Therefore, it can be surmised that teachers could benefit from an instructional videotape to help them to recognize that potential vocal problems exist.

Recommendations

As a result of this study, there is a need for future research in the area of vocal hygiene management via the use of instructional videotapes. There is potential for this vocal hygiene videotape to increase teachers' awareness of vocal symptoms and orient them on how to utilize different techniques to avoid vocal phonotrauma. This videotape could be introduced during in-service training so that teachers could recognize voice problems early and seek medical attention. Insurance providers could use this videotape as a preventative health option and this could result in reduced medical expenses and sick leave. This study substantiated that a videotape on vocal hygiene would be an effective model to develop vocal awareness among teachers, reach a wide audience, and improve the vocal quality of life of teachers.

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APPENDIX A

<h2>Elementary School Teacher Voice Prequestionnaire</h2>
*Name: _____ *Date: _____ (* Required Information)
Teachers, this is a questionnaire, NOT a test. The information will ONLY be used to establish baseline for this research. This data is confidential and will be used expressly for purposes of this study. Please include your name above. <i>Thank you very much for your time and consideration.</i>

Directions for Items A-E

Please explain if you have had any exposure, prior training and/or experience in the speech-language field by checking the appropriate response below.

A. Have you ever seen a professional for any voice-related concern?	_____ Yes _____ No
B. Are you currently seeing a professional for your voice?	_____ Yes _____ No
C. Have you ever participated in any classes or seminars related to voice?	_____ Yes _____ No
D. Have you ever worked or volunteered in the speech-language field?	_____ Yes _____ No
E. If you checked a "yes" for question D, please indicate the length and time of your experience.	

Directions for Items 1-11

Below are open-ended questions. Please respond to each item as best that you can. Write your responses in the space provided.

1. Two anatomical structures that are used to produce voice include:

_____ , _____

2. Three ways that teachers can misuse or overuse their voices are:

_____ , _____ , _____

3. Two ways that I misuse or overuse my voice include:

_____ , _____

4. One underlying medical condition that may appear as a voice problem is:

5. Two types of *professional specialists* that can be seen for a *voice* problem are:

_____ , _____

6. One vocal symptom commonly associated with gastroesophageal reflux disease (GERD) is:

7. Two voice symptoms that show vocal stress are:

8. Two elements in my classroom environment that can cause voice problems consist of:

9. Two ways to prevent environmental problems that could affect my voice are:

10. Two ways to prevent misusing or overusing my voice are:

11. Two teaching techniques to minimize voice misuse or overuse consist of:

Comments:

Thank you for taking the time to complete this questionnaire.

APPENDIX B

Elementary School Teacher Voice Postquestionnaire

*Name: _____ *Date: _____

(*) Required Information

Teachers, this is a questionnaire, NOT a test. The information will ONLY be used to establish baseline for this research. This data is confidential and will be used expressly for purposes of this study. Please include your name above. *Thank you very much for your time and consideration.*

Directions for Items 1-11

Below are open-ended questions. Please respond to each item as best that you can. Write your responses in the space provided.

1. Two anatomical structures that are used to produce voice include:

2. Three ways that teachers can misuse or overuse their voices are:

3. Two ways that I misuse or overuse my voice include:

4. One underlying medical condition that may appear as a voice problem is:

5. Two types of *professional specialists* that can be seen for a voice problem are:

6. One vocal symptom commonly associated with gastroesophageal reflux disease (GERD) is:

7. Two voice symptoms that show vocal stress are:

8. Two elements in my classroom environment that can cause voice problems consist of:

9. Two ways to prevent environmental problems that could affect my voice are:

10. Two ways to prevent misusing or overusing my voice are:

11. Two teaching techniques to minimize voice misuse or overuse consist of:

Directions for Items 12-18

Please indicate your opinion by checking the space next to your preferred responses.

12. How well did the videotape teach how voice is produced?

<input type="checkbox"/> Extremely Well	<input type="checkbox"/> Well	<input type="checkbox"/> Neutral	<input type="checkbox"/> Fair	<input type="checkbox"/> Poorly
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13. How well did the videotape teach how teachers misuse or overuse their voices?

<input type="checkbox"/> Extremely Well	<input type="checkbox"/> Well	<input type="checkbox"/> Neutral	<input type="checkbox"/> Fair	<input type="checkbox"/> Poorly
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14. How well did the videotape teach you how to recognize voice stress?

<input type="checkbox"/> Extremely Well	<input type="checkbox"/> Well	<input type="checkbox"/> Neutral	<input type="checkbox"/> Fair	<input type="checkbox"/> Poorly
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15. How well did the videotape teach you how to prevent voice problems?

<input type="checkbox"/> Extremely Well	<input type="checkbox"/> Well	<input type="checkbox"/> Neutral	<input type="checkbox"/> Fair	<input type="checkbox"/> Poorly
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16. Would this videotape be a useful preventative tool for increasing awareness of vocal misuse for elementary school teachers?

<input type="checkbox"/> Very Useful	<input type="checkbox"/> Useful	<input type="checkbox"/> Neutral	<input type="checkbox"/> Somewhat Useful	<input type="checkbox"/> Not Useful
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17. How likely is it that you will implement at least one preventative technique described on this videotape?

<input type="checkbox"/> Very Likely	<input type="checkbox"/> Likely	<input type="checkbox"/> Neutral	<input type="checkbox"/> Not Likely	<input type="checkbox"/> Never
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18. How likely are you to recommend this videotape to other teachers?

<input type="checkbox"/> Very Likely	<input type="checkbox"/> Likely	<input type="checkbox"/> Neutral	<input type="checkbox"/> Not Likely	<input type="checkbox"/> Never
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Directions for Item 19

Below is an open-ended question. Please respond to this item as best that you can. Write your responses in the space provided.

19. Which techniques do you find most useful? (List at least two.)

Comments:

Thank you for taking the time to complete this questionnaire.