

# **A STUDY ON TEACHERS' VOICE DEVELOPMENT IN THE CONTEXT OF THEIR PROFESSION**

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***Abstrakt:*** Every teacher needs a quality voice as an important component of his or her professional competence. Many teachers are aware of some problems concerning their voices as early as at the beginnings of their pedagogical activity, but do not pay due attention to them. A number of teachers do not also know how to work with voice and how to take care of it.

In the first stage of the project, 65 respondents were questioned – all of them students of combined university studies who had already taken active part in the educational process. The following techniques were used:

1) The author's questionnaire directed towards the subjective perception of one's speaking and singing voice, the knowledge of voice hygiene, the sources of this knowledge and the voice load in extraprofessional activities.

2) The Voice Handicap Index (VHI) questionnaire worked out by Jacobson and her colleagues (1997), by means of which it is possible to establish the subjective evaluation of the quality of one's voice and of the impact one's voice has on socio-professional functions.

At the same time all the respondents' voices were recorded so that objective changes of their voices could be monitored systematically. A computer was used whose software is able not only to record voices but also analyse them by determining their DSI.

***Key words:*** voice, teachers, voice hygiene, voice evaluation, Voice Handicap Index, Dysphonia Severity Index.

## **Introduction**

A quality voice is an important component of the teacher's professional competence. Voice fitness makes the basis of pedagogical communication. A good voice is not only a presupposition of understandability and communicativeness of verbal communication, it also augurs well for the effectiveness of communication, since

fatigue as a result of voice problems leads to decrease in the frequency and intensity of communication.

And vice versa, a good vocal quality helps to assure full understandability of the ideas, announcements and intentions the teacher expresses, does not distract the listeners' attention, does not tire them by their constant guessing the unintelligible words in the communication and does not disturb the mutual contacts.

To master the sound aspect of verbal communication means, however, a good speech technique, including breath technique, the technique of the basic voice formation together with flawless articulation and balanced ratio of resonances.

The disturbing factors of the vocal performance include various degrees of hoarseness, a husky or faltering voice, jumping of the voice (i.e. sound failures in speech), a weak voice, a breaking voice, a voice with constantly disproportionate loudness, etc. The given phenomena usually signalize a temporary or constant interference with the voice function. All sound changes of the voice performance, caused either by a disease of a vocal organ or by incorrect functions of the phonic, respiratory or articulating organs are classified as voice disorders in our conception.

Voice disorders can occur separately or in combination with other kinds of impaired ability of communication (dysarthria, aphasia, balbuties, palatalalia), or as part of somatic diseases (lung diseases, asthmatic bronchitis) or psychic ones (hysteria) (Lechta, 2003).

Voice disorders are mostly beyond an individual's ability to cope with them independently; they usually need consulting a doctor and sometimes subsequent therapeutic intervention.

Many teachers are aware of some problems concerning their voices as early as at the beginning of their pedagogical activities, but do not pay due attention to them, partly because they lack sufficient knowledge of voice that would direct and structure their self-evaluation. In addition, a number of teachers do not know how to work with voice and how to take care of it. Another reason why some teachers lack the ability to assess critically the bad quality of their own voice (self-diagnosis) is the fact that they gradually get accustomed to it, make up for the consequences of the unsatisfactory quality of their voice by raising their effort (which they consider necessary due to the generally demanding character of teaching) and in fact stop thinking about the coming problem. Quite often they do not see a doctor until they are asked to by people around them.

## **Research objectives**

The main output of the present research project will be creating an integral system of exercises and recommendations for work with voice that should inspire future teachers to observe the principles of voice hygiene in their personal and professional lives.

The aim of the present stage of the research is to assess the characteristic features and development of voice in the context of pedagogical practice; this will be our starting point for working out the conception of the exercises.

## The research set of respondents

In the first stage of the project, 65 respondents were questioned (4 men, 61 women), all of them students of combined university studies who had already taken active part in the educational process.

Most respondents had been teaching for 1 to 6 years.

Their weekly teaching loads were in the region of usual numbers of classes.

Age		The lenght of practise		The weekly load	
The oldest	45	1-3 years	20	The highest	26
The youngest	22	4-6 years	28	The lowest	8
The average	30	7-9 years	7	The most frequent	22
The most frequent	23	10-12 years	2	The average	21,4
The median	29	13-15 years	2		
		16-18 years	1		
		19-21 years	4		
		25 years	1		

## The research methods

**The following techniques have been used:**

- A) The author's questionnaire directed towards the subjective perception of one's own speaking and singing voice, the perceived needs for changes of both the speaking and the singing voice, the knowledge of voice hygiene, the sources of this knowledge, and the voice load in professional and extra-professional activities.
- B) The Voice Handicap Index (VHI) questionnaire worked out by B. H. Jacobson and her colleagues (1997), by means of which it is possible to establish the subjective evaluation of the quality of one's voice and of the impact one's voice has on socioprofessional functions. In the Czech Republic it has not been much used yet (Frostová, Lejska, 2006). The questionnaire is not a substitute for medical anamnesis, but it is able to provide information on the seriousness of the troubles, problems, difficulties and restrictions that arise in the personal and professional lives of the respondents and are caused by or connected with various voice difficulties or disorders. The respondents answered according to a five-degree scale. The questionnaire is divided into three groups of 30 questions each, described by the authors as the functional factor, the psychological factor and the emotional factor.

These „factors“ cover:

- 1) *the functional (practical, operational) region* (the impact of voice difficulties on life and life situations);
- 2) *the psychological region* (data on feelings during one's speech and on the perception of one's own voice);

- 3) *the emotional region* (the respondent's emotions caused by voice problems and the impact of voice problems on the social environment)
- C) At the same time all the respondents' voices were recorded so that objective vocal changes could be monitored. A computer was used with software that scans the voices and makes a later analysis, especially the DSI (Dysphonia Severity Index) evaluation, possible. DSI means, according to Wuyts (2000), „a transfer of the audible quality of the voice into a one-dimension correlating value“. The DSI is calculated according to a formula consisting of the values of the highest frequency, the lowest volume, the maximum phonation time (MPT) and the jitter. The DSI values range from +5 (for the normal voice quality) to -5 (for severe voice disorders). The more marked the negative index value, the worse is the voice quality.

## Results

With regard to the aim of our investigation we are interested in what we consider one of its starting points, namely the load of both the speaking and the singing voice in the respondents' extra-curricular activities.

**Table 1:**

Voice load in extra-curricular activities (in hour a week)									
	min	max	mode	average	1-3 h	4-6 h	7-9 h	10-12	13-15 h
Speaking voice	0	10	2	3,49	26	13	1	4	0
Singing voice	0	15	2	2,80	28	2	2	1	1

## The extent of the knowledge of voice hygiene

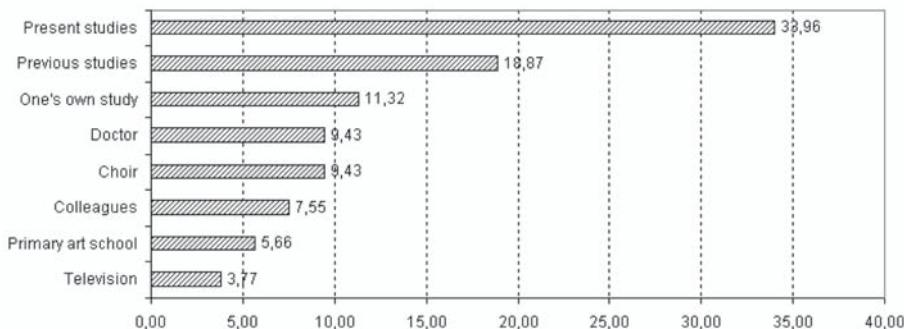
A surprising discovery was the fact that only 52.30 per cent of the respondents had some knowledge of voice hygiene, while 47.69 per cent had none or almost none. The knowledge was considerably restricted, the most frequent answers being: *not to shout, not to overtax one's voice, not to drink cold beverages*.

## The sources of the knowledge of voice hygiene

More than one third of the respondents obtained their knowledge of the voice care possibilities while studying at the Faculty of Education (see Chart 1). Others had the knowledge before they came to the Faculty, mostly from secondary pedagogical schools and grammar schools, others gained the information by reading and studying books, articles and selected titles from the Internet. Also choirs (church or secular ones) educated their members (the choirmaster playing an important role here), or the respondents got the knowledge from doctors (general practitioners, phoniatricians, ENT (ear, nose and throat) specialists or from their colleagues. A well-informed group were respondents who had studied solo singing at primary art schools, because they had taken

part in voice training. These respondents could be expected to have higher perceptiveness towards the changes in the quality, health and needs of their voices. The smallest part of the respondents obtained their information on voice hygiene from TV programmes.

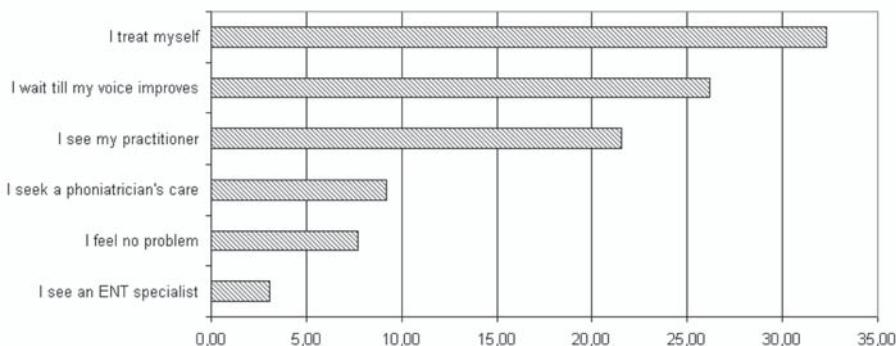
**Chart 1: The sources of the knowledge of voice hygiene**



## The ways of tackling voice problems

The results suggest that the prevailing tendency is a certain trivialization of voice problems (32 per cent of the respondents would „*have their own treatment*“; 26 per cent would only wait for spontaneous improvement of their voice). We would expect a more responsible attitude to voice care from teachers as voice professionals<sup>1</sup>, since their voice is their working tool (see Chart 2).

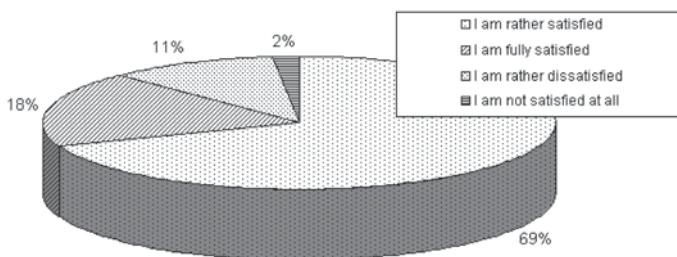
**Chart 2: The tackling of voice problems**



<sup>1</sup> The concept of voice professional means a person who necessarily needs a perfect voice function for performing his or her profession. According to the instructions of the Union of European phoniatricians, teachers are, in agreement with the voice quality requirements, classified into the second group of voice professionals (Novák, 2000).

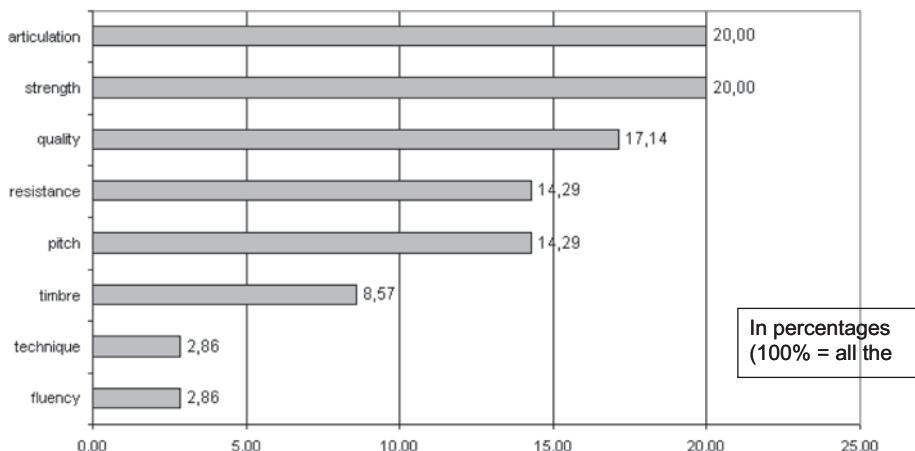
## Subjective evaluation of the speaking voice quality

Chart 3: Subjective evalution of the speaking voice quality



Fewer than one fifth of the respondents are fully satisfied with their voice (see Chart 3) and in principle do not want to change anything on it (only one answer concerned some improvement of the articulation). Approximately 43 per cent of the respondents said they needed a change of their speaking voice (see Chart 4).

Chart 4: Subjectively felt need for a change of one's speaking voice



The respondents most often answered the open question concerning their feelings about a change by saying they needed to improve articulation. (Two respondents were aware of their articulation defects (rotacism, sigmatism) that needed logopaedic care.) The same percentage of the respondents felt that they needed a stronger voice. The wish for „a stronger voice“ may include – in regard to the teaching profession – also a more sonorous and resonant voice.

Dissatisfaction with the quality of one's voice is relatively frequent in the investigation, too. The respondents mostly characterized their voice as *hoarse, raspy, rough, unrefined*, and wanted *a smooth voice, pleasant to the ear*. A statement of the type: „*my voice is rather hoarse in the morning*“ probably refers to a voice disorder connected with a change on the vocal cords.

Nearly 15 per cent of the respondents would like to raise the resistance of their voice. Their statements (*I feel that my voice is tired after my classes, I wheeze, my voice is going, my voice keeps failing, I sometimes start shouting and my voice aches me then*) are signals of some voice problems. A functional or organic disorder may be present, needing phoniatric examination.

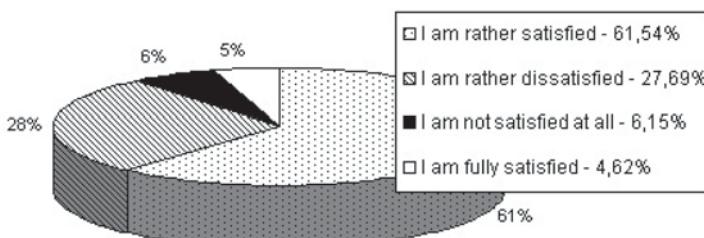
About the same percentage of the respondents would like to raise or lower the pitch of their voice.

## Subjective evaluation of the singing voice quality

Roughly one half of the respondents (52 per cent) teach music within their teaching loads and nearly three quarters of the respondents say that they use their singing voice either in their profession or in hobby groups, the average extra-curricular load of the singing voice being almost 3 hours a week (see Table 1). We were therefore interested in how the respondents evaluated, in addition to their speaking voice, also their singing voice, or perhaps if they felt that any changes of its parameters were needed.

A markedly prevailing majority of the respondents (66 per cent) evaluated the quality of their singing voice favourably (three quarters of them being music teachers). The group of respondents „*dissatisfied*“ with their singing voice contained mostly teachers who did not teach music as their specialization (48 per cent of the 31 respondents not teaching music and 21 per cent of the 34 music teachers).

Chart 5: Subjective evaluation of the singing voice quality



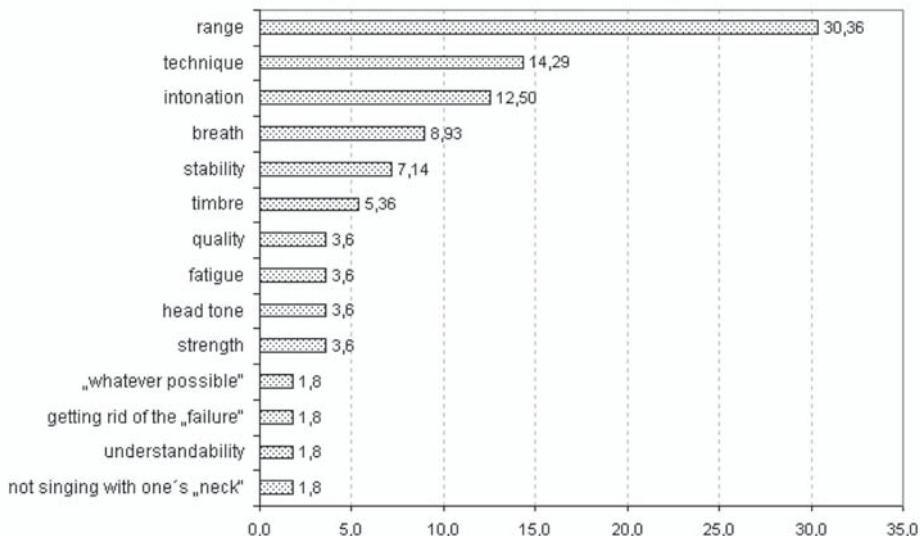
There is an interesting difference between those who were not at all satisfied with their voice and the others: while the thoroughly dissatisfied respondents were only exceptionally able to specify what parameters of their singing voice they wanted to change, the other respondents managed to perceive and evaluate the drawbacks of their singing voice and also to formulate more exactly what changes they needed.

## Subjectively felt need for a change of one's singing voice

One third of the respondents answered the open question concerning their feelings about a change by saying that they needed to enlarge their singing voice range (see Chart 6).

The demands made on the singing voice (in the context of teaching music) are higher than those made on the speaking voice.

**CHART 6: Subjectively felt need for a change of one's singing voice**



All the required vocal changes the respondents mentioned (like *improving the breath technique, a stronger voice, vocal stability, a better understandability*) are subjects in building the singing technique. There are many aspects where a quality singing-voice technique exerts a favourable influence on the speaking-voice technique, and vice versa, a good speaking technique does not burden the singing voice. If the speaking voice is being overtaxed or is not managed properly from the technical point of view, the muscles of all the voice-forming system become fatigued, which has an impact on the quality of the singing voice as well. Some of the many symptoms that may appear then is a gradual reduction of the range of the singing voice<sup>2</sup> and strenuous voice forming.

Some statements are warning, since they reflect indirectly the health of the respondents' voices: *my voice fails, I wheeze after my music class and don't want to speak, after singing rather long I feel I have a lump in my throat, I have a hoarse voice after singing, I would like to keep a high note without any health problems.*

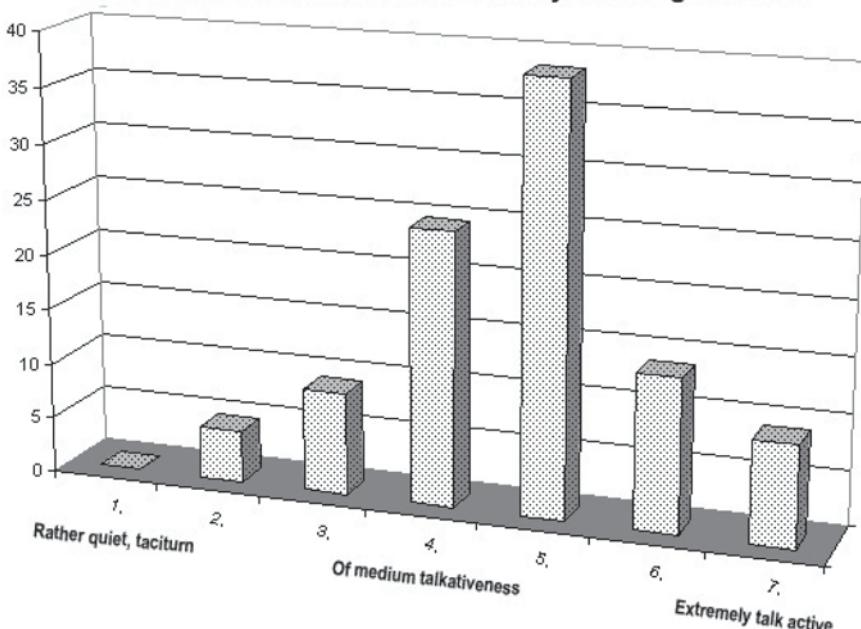
## Subjective perception of voice problems by means of VHI

The VHI questionnaire establishes, in addition to the voice problems described in the Introduction of the present paper, also degrees of „talkativeness“ (extremely talk activite) on a seven-degree scale.

<sup>2</sup> The influence of ageing is not meant here.

Chart 7 shows how talkative are the responding teachers.

**Chart 7: Self-evaluation of the intensity of talking activities**



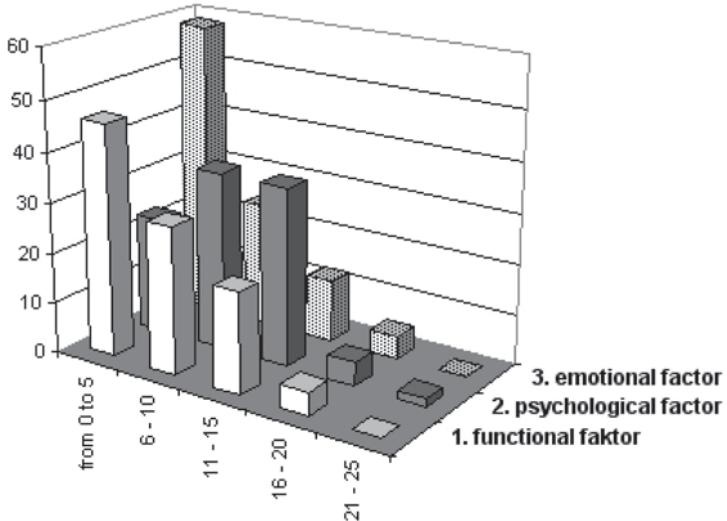
Most respondents see themselves as an average to slightly talkative type. The results, however, should not be taken as fully informative, since experience and similar investigations suggest that respondents are not entirely critical in this kind of self-evaluation. Řehulka, Řehulková (1998), e.g., found out that the women teachers' partners evaluated them as „talkative“.

### **A comparison of the VHI results in the separate groups of questions (in percentages)**

The results show that most voice problems are reflected in the group of difficulties the authors classify as „psychological“ (psychological factor), see above. The self-evaluations mostly refer here to the categories expressed by the index 6–15 points (see Chart 8).

In the „functional“ region (functional factor) and „emotional“ region (emotional factor) the evaluations mostly range from 0 to 5 points (46.15 per cent and 58.05 per cent respectively).

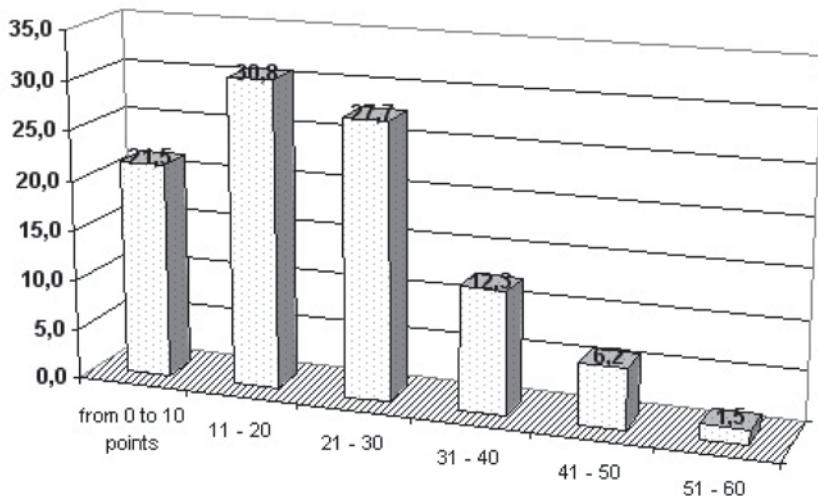
**Chart 8: The respondents' self-evaluation according to the VHI groups**



Although these results cannot, due to the number of respondents, be taken as fully informative, they are very illustrative of the subjective perception of voice problems.

### Total results of the speaking voice subjective evaluations in the VHI questionnaire – the distribution of the degrees (in percentages)

**Chart 9: Total results in the VHI questionnaire - distribution of the %**

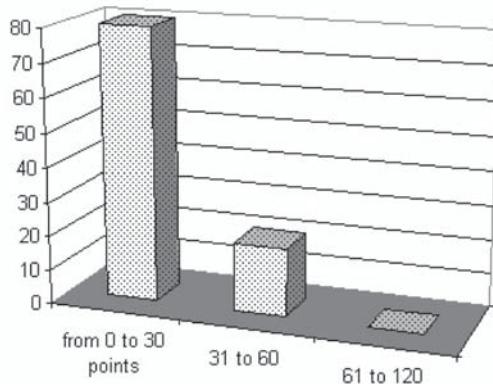


0 to 30 points - no or minimal voice problems, 31 to 60 points - medium type voice problems, 61 to 120 points - serious damage to the voice

## Total results of the speaking voice subjective evaluations in the VHI questionnaire

The preliminary analysis of the results shows that 80 per cent of the respondents have no or minimal voice problems, 20 per cent have a medium type of voice problems, and none of the respondents mentions any serious problem.

Chart 10: The VHI score



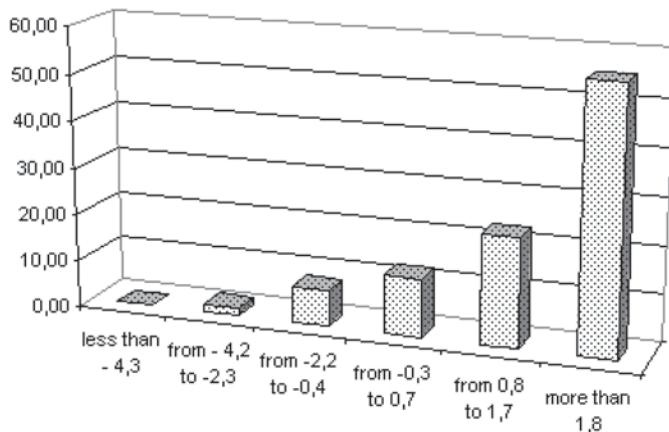
## Distribution of the DSI (Dysphonia Severity Index) values

In order to establish the levels of voice damage, the DSI levels found out by our measurements were evaluated according to the table worked out by BOTH, WUYTS (2007). The DSI values are correlated with TOM (Therapy Outcome Measures, Enderby, 1997).

TOM		DSI
0	Severe persisting aphonia: patient has no voice, is unable to phonate	< - 4.3
1	Constant dysphonia: Sporadic periods of phonation, aphonic periods may be present	- 4.2 to - 2.3
2	Moderate dysphonia: patient can produce voice, but there are frequent periods of dysphonia	- 2.2 to - 0.4
3	Slight to moderate dysphonia: less frequent periods of disturbed phonation or slight persisting dysphonia	- 0.3 to 0.7
4	Slight dysphonia: sporadic dysphonic moments for short periods	0.8 to 1.7
5	No dysphonia	> 1.8

Chart 11 shows the levels of damage to the vocal function in the respondents we monitored.

**Chart 11: Distribution of the monitored respondents' DSI values**



The values we measured show that 55 per cent of our respondents have no voice disorders, 23 per cent suffer from slight dysphonia, 12 per cent from a minor permanent hoarseness and 8 per cent from frequent periods of hoarseness. One respondent, whose DSI value suggested permanent dysphonia, was taken into phoniatric care six months ago: she is getting demanding voice rehabilitation from a voice pedagogue.

## Conclusion

The results of our investigation indicate that teachers perceive problems with both their speaking voice and their singing voice.

Although it goes without saying that teachers should know the principles of voice hygiene and of observing precautionary measures, they appear to have only minimal or even insufficient knowledge of voice hygiene.

All teachers should be informed on the symptoms of possible voice difficulties so as to undergo the necessary specialized medical examination (phoniatrics, ENT) in time.

It follows from the respondents' answers that they do not sufficiently avail themselves of the possibilities of specialized medical care. One would expect a more responsible attitude to voice care from teachers as voice professionals.

The results also show a rather considerable tendency towards trivialization of voice problems and a low level of the basic self-diagnosis of voice difficulties.

The analysis of the given subjective evaluations referring to voice parameters suggests functional voice problems.

The objective measurements using the DSI method (the analysis of voice scans)

that we did as the first stage of our research are in practical accordance with the subjective data (voice problems) stated in the VHI questionnaire.

In order to prevent development of severe voice disorders and voice diseases it is necessary to put the accent on subjective perception of one's own voice. If initially slight or only occasional symptoms of voice dysfunction are underestimated or not accepted, a functional or organic disease may deepen and serious diseases (like malignant tumours) may be neglected.

Voice is an important part of performing the teaching profession, and all changes of its quality or its diseases exert a negative influence on the teacher's work as well as the overall working atmosphere. Voice problems, or, more exactly, their consequences in contacts with people, self-reflection and self-evaluation, could become significant stressors, disturbing the teacher's mental health.

A comprehensive knowledge and information on voice hygiene should contribute to a change of the attitude to one's own voice, because all teachers should realize that their voice is their most important working tool.

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## PŘÍSPĚVEK K VÝVOJI HLASU UČITELŮ V KONTEXTU PEDAGOGICKÉ PROFESE

**Souhrn:** Kvalitní hlas je pro učitele důležitou složkou jeho profesní kompetence. Mnozí učitelé již v počátcích pedagogické činnosti určité hlasové problémy registrují, ale nevěnují jim náležitou pozornost. Řada z nich rovněž neví, jak s hlasem pracovat a jak o něj pečovat.

V první etapě projektu proběhlo šetření u 65 respondentů – studentů kombinovaného studia, kteří již působí ve výchovně vzdělávacím procesu. Byly použity následující techniky:

- dotazník vlastní konstrukce zaměřený na zjištění subjektivní percepce mluvního i zpěvního hlasu, na vědomosti o hlasové hygieně, na zdroje těchto vědomostí, i na zjištění hlasové zátěže v mimopracovních aktivitách;

- dotazník Voice Handicap Index (VHI), konstruovaný Jacobsonovou a spolu-pracovníky (1997), pomocí kterého lze zjistit subjektivní hodnocení vlastní kvality hlasu a vlivu kvality hlasu na socioprofesní funkce.

Současně byly u všech respondentů pořízeny hlasové snímky pro systematické sledování objektivních změn hlasu. Použit byl počítač se softwarem, který umožňuje záznam snímků a jejich následnou analýzu stanovením DSI (Dysphonia Severity Index).

**Klíčová slova:** hlas, učitelé, hlasová hygiena, hodnocení hlasu, Voice Handicap Index, Dysphonia Severity Index.