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INOVATIVE PEDAGOGICAL TECHNOLOGIES FOR DEVELOPING VOCAL SKILLS IN HIGH SCHOOL STUDENTS

ABSTRACT

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Field of higher education: 1. Pedagogical Sciences
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The dissertation has 193 pages, 160 – main text and 33 – Appendices. The list of the used literature consists of 96 sources, 27 Bulgarian and 69 foreign, in Latin script.

Main text contains Introduction, three chapters, Conclusions and Contributions. It includes 12 tables, 24 figures (graphics and pictures), 21 diagrams and 10 music examples.

In Appendices are additionally included 26 figures and photographs and 15 music examples.

Chapter One reflects the accomplishment of the first main task of the dissertation, namely: studying the evolution of vocal pedagogy and the current state of the issue regarding innovative pedagogical technologies for developing vocal skills in high school students.

Chapter Two examines the main issues in the development of vocal skills in high school students, as identified throughout the review of pedagogical literature, and prenets a system of innovative pedagogical technologies to address these challenges.

Chapter Three presents the empirical validation of the system of pedagogical technologies for developing vocal skills in the specific age group of high school students, carried out through a pedagogical experiment conducted in three stages: Initial, Formative, and Final.

The conclusion of the dissertation presents important summaries and conclusions based on the research results.

The dissertation was discussed and directed for public defence by an extended council of the Department of Music at the Faculty of Education of Plovdiv University "Paisii Hilendarski".

The defense of the dissertation will take place at a meeting on 20.06.2025 г. at 14:00 h. in Plovdiv University "Paisii Hilendarski".

The materials on the defense are available at the administrative secretary of the Department of Music and Aesthetic Education, Faculty of Education, room 115, Plovdiv University "Paisii Hilendarski".

CONTENTS

INTRODUCTION.

SUBJECT, OBJECT, AIM, OBJECTIVES, METHODS, METHODOLOGY, SOURCES AND HYPOTHESIS OF THE STUDY

The modern music scene sets high standards for performers. Vocal pedagogy undergoes constant changes in the process of globalization and modernization, as do all spheres of human life. The basic principles of vocal training are based on the established traditional vocal-pedagogical technologies, methodologies and experience, but this does not stop vocal pedagogy from seeking new perspectives and paths for its development. The diversity in vocal music on a global scale, the syntheses between music, science and other arts, the technological progress of the modern world and the ever-increasing opportunities that it provides to performers and teachers, are just some of the factors that require the creation of a new synthetic type of performers who meet the standards of the modern music scene.

The diversity of specialized literature provides a rich insight into the problematic aspects of the anatomy, physiology and psychology of singing. Increasingly, vocal pedagogues combine elements of different methodologies in their work process, depending on their personal judgment, genre preferences and the vocal capabilities of each student. The modern vocal pedagogue has the difficult task of applying in his practice both standard methods and pedagogical technologies, established over time, and innovative approaches that will promote the symbiosis between teacher and student and enable future singers to achieve better results in physical, emotional, intellectual and psychological terms. The correct selection and integration of innovative and non-standard methods of vocal training depends both on the technical training of the pedagogue and on his personal practical experience and judgment.

The study is based on the personal performing and pedagogical experience of the author, established as a solo pop and jazz performer, music teacher and vocal pedagogue.

In his many years of performing and pedagogical practice, the author of the study has established the need for the creation and implementation of innovative pedagogical technologies that would

update the existing classical methods and technologies in vocal training, in order to enrich and modernize vocal pedagogy.

The subject of the study is the research of innovative methods and pedagogical technologies in vocal training of students in the upper secondary school stage (13-19 years old). The choice of the subject is determined by:

- • the need to develop and implement innovative pedagogical technologies in vocal training as a natural response to the need to update existing approaches to singing and vocal mastery in the context of building full-fledged and competitive singers who meet all world standards imposed on a global scale;
- • the lack of sufficient examples and specifics regarding the integration of modern electronic and digital devices, computer programs and mobile applications in vocal training;

• the lack of a modern, effective and motivating innovative system of technologies for forming vocal skills and habits in high school students, which would correspond to their specific needs in the period of maturation.

The object *of the study is the implementation of innovative pedagogical technologies in vocal training and their integration into the methods of established vocal pedagogical practices for high school students.*

The aim *of the study is to formulate a methodology for the application of innovative pedagogical technologies, through which to increase the effectiveness of vocal training for high school students in the following aspects:*

• *vocal-technical - formation of habits and skills regarding the elements of vocal performing art, related to vocal staging and sound extraction;*

• *artistic-interpretative - formation of habits and skills regarding the elements of vocal performing art, related to artistic interpretation;*

• *psychological - formation of skills for controlling emotions, overcoming psychological instability, excessive anxiety and stage fright;*

• *motivational - increasing personal motivation and desire for vocal development.*

The objectives *of the study are:*

1. To study the development of vocal pedagogy to date, including the existing established vocal methodologies and their field of application;

2. To analyze the anatomical, physiological, psychological and emotional characteristics of students in the specific age group (13-19 years);

3. To outline the specific problem areas in vocal work with adolescents in the high school stage of education;

4. To select appropriate mobile applications and music programs for sound recording and sound processing to assist the modern vocal pedagogue;

5. To compile innovative pedagogical technologies and approaches in modern vocal training;

6. To conduct a pedagogical experiment for practical verification of the effectiveness of innovative technologies for the formation of vocal habits and skills in students in the high school stage of education.

Research methods: *pedagogical observation, analysis (of theoretical, visual and sound information), comparison, generalization, pedagogical experiment.*

The research methodology *is based on scientific data on anatomical, physiological and psychological changes in students at the high school stage of education and their interconnection with all elements of vocal and performing art, as well as their direct connection with the quality of singing activity and its artistic and aesthetic value.*

The sources *of the research are works by Bulgarian and foreign authors in the field of vocal pedagogy, innovative pedagogy, child psychology, materials and publications related to musical equipment, software, sound recording, mobile applications.*

Research hypothesis: *"the application of innovative pedagogical technologies for the formation of vocal habits in students in the high school stage of secondary school would contribute:*

• to improving the effectiveness of vocal training at this age and to mastering the art of singing;

• to the overall vocal-technical development of students and to improving their artistic performance;

• to increasing the self-esteem, self-control, motivation and desire for vocal development of students at this age;

• to modernizing and enriching vocal-pedagogical technologies for the formation of vocal habits and skills, in support of vocal teachers.

1. CHAPTER ONE

RESEARCH ON THE HISTORY OF VOCAL PEDAGOGY IN SPECIALIZED LITERATURE AND THE CURRENT STATE OF THE ISSUE REGARDING INNOVATIVE PEDAGOGICAL TECHNOLOGIES FOR THE DEVELOPMENT OF VOCAL SKILLS IN HIGH SCHOOL STUDENTS

Chapter One presents the fulfilment of the first of the first tasks of the dissertation, which involves research and a study of the history of vocal pedagogy and the current state of the issue regarding innovative pedagogical technologies for developing vocal skills in upper secondary school students, as explored in specialized literature. The chapter identifies the key challenges related to innovations in vocal training and proposes a theoretical model for innovative vocal pedagogy. A total of 49 Bulgarian and international publications, along with 8 websites, were reviewed.

1.1. Inovative Pedagogy

The results of the research in the field of innovative pedagogy are presented and the concept of "innovative pedagogical technologies" is defined. The main challenges facing innovations in education today are outlined.

1.2. Vocal Pedagogy

The second section of Chapter One presents the results of the review of scientific literature on the history of vocal pedagogy and its evolution to the present day. Vocal methodologies and systems for working with the voice, different in ideology, used in the author's personal practice, are studied:

- Belcanto Method
- Manuel Garcia - son
- Richard Miller
- Seth Riggs and his "Speech Level Singing"
- Jo Estill and the Estill Method
- The Alexander Method

The problem of the state of contemporary vocal pedagogy and its pedagogical technologies and tools is studied.

1.3. Contemporary computer technologies and electronic devices with application in music and vocal pedagogy

Subsection 1.3 presents the results of the study of the problem of the state of vocal training in Bulgarian secondary schools, both in general education classes and in extracurricular elective classes.

Various musical and computer technologies and electronic devices with application in the vocal training of secondary school students are examined.

1.4. Innovative Vocal Pedagogy

A variety of innovative pedagogical technologies and approaches (individual, interdisciplinary and synthetic) are presented, aimed at mastering the art of singing, preserving vocal health and at distance or hybrid teaching and learning of singing.

The main generally valid directions of vocal-pedagogical work are systematized and a classification of innovative pedagogical technologies in vocal training is compiled. A detailed theoretical model of innovative vocal pedagogy, expressed in tabular form, is created.

1.5. Characteristics of Vocal Work with High School Students (13-19)

The fifth section of Chapter One presents the results of the study in the specialized pedagogical and child-psychological literature on the general features of working with students in the specific age group.

The vocal-pedagogical features of the formation of singing skills in students in the high school stage of secondary school education (13 to 19 years of age) are examined.

CONCLUSIONS AND SUMMARIES AFTER STUDYING THE PROBLEM OF INNOVATIVE PEDAGOGICAL TECHNOLOGIES FOR THE FORMATION OF VOCAL SKILLS IN HIGH SCHOOL STUDENTS

Modern vocal pedagogy can be defined as a specialized, multidisciplinary subject area, helping to form skills for effective and healthy use of the voice. Many classical approaches and systems for working with the singing voice are known, but modern vocal pedagogues are increasingly turning their attention to new technologies and looking for a more comprehensive, synthetic pedagogical approach, integrating technical means, holistic approaches, various aspects of established traditional vocal methodologies and new vocal-pedagogical tools with wide application in group and individual practice.

The issues of innovative pedagogical technologies in the field of vocal pedagogy are little studied, mainly due to the rapid pace of technological progress in the modern world and the constant changes that it imposes in every sphere of life today. Music is one of the areas that, viewed globally, has undergone the most significant and visible change in recent years. With the introduction of electronic musical instruments, digital technologies, computer programs for creating and processing music, Internet music platforms and publicly accessible social networks, completely new perspectives in musical art are revealed, which in turn lead to new educational scenarios.

The variety of modern technologies allows vocal pedagogy to develop, change and constantly renew. It is an extremely adaptive science and its methods and technologies correspond to the specifics of modern understandings of achievements in the musical world.

The results of the study indicate that:

1. At present, a comprehensive and detailed system of innovative pedagogical technologies for the formation of vocal skills in high school students in our country has not been developed. The studied vocal-pedagogical literature does not provide a comprehensive analysis of modern vocal-pedagogical technologies. Existing sources in the field of vocal pedagogy fully follow the established methods and technologies for the formation of vocal skills and focus mainly on classical approaches to working with the voice. They do not define in detail what innovative technologies could be implemented in vocal

training and do not clarify the issues related to the use of new modern computer hardware and software as a training tool.

2. Today, vocal pedagogues apply in their practice a variety of innovative vocal-pedagogical technologies that integrate both various principles and elements of classical established vocal methodologies and new pedagogical tools and strategies. However, there is still no described and systematized vocal-pedagogical system and the corresponding methodology and terminology that would systematically use innovative technologies for developing vocal potentials. Such a system is undoubtedly to be developed and improved over time, and the author of this study aims to support this process.

3. Methods and technologies for distance and hybrid vocal training are poorly studied and reflected in the published literature, as are issues with the use of mobile devices as a learning tool.

4. Vocal training in general education music classes in secondary schools at the high school level is poorly represented and ineffective, mainly due to the small number of classes, limited time and the large number of students in the class, and the work in the specific age group is specific and highly dynamic, in view of the anatomical, physiological and psychological changes in high school students.

The results of the study categorically establish the absence of a system of innovative pedagogical technologies for the formation of vocal skills in students of the high school stage of secondary school education in Bulgaria, which justifies the need to develop such in the present work and verify its effectiveness.

CONTRIBUTION MOMENTS PRESENTED IN CHAPTER ONE

• The results and analyses derived from the detailed study of the specialized literature regarding the features on the development of vocal skills in high school students are presented, considering the intricate nature of this process within this particular age group. The study highlights the diverse psychological, physiological, and anatomical characteristics of students aged 13 to 19, which influence their vocal development.

• Specific innovative pedagogical technologies for developing vocal skills in students are presented, being introduced and applied for the first time in secondary school education. These technologies represent a comprehensive and advanced system of vocal training, which can be regarded as an integrated framework of interconnected elements. They are a complex base and innovative system for vocal training, uniting the vocal-technical proficiency, artistic-interpretative expression and psychological development of students.

• Chapter One introduces a classification of innovative methods, technologies, and approaches in vocal training based on their application and pedagogical tools, offering a structured and comprehensive perspective on contemporary advancements in vocal pedagogy. Additionally, the study presents a theoretical model of innovative vocal pedagogical technologies (*Table 2*).

Table 2 – Theoretical model of innovative vocal pedagogy

Innovative Vocal Pedagogy			
Goals:	**Mastering the Fundamentals of Vocal Art**		
Tasks:	**Development of Vocal-Technical and Artistic-Interpretive Skills**		
Approaches:	**Individual**	**Interdisciplinary**	**Synthetic**
Innovative Vocal-Pedagogical Technologies:	**Technically-oriented, entirely dependent on electronic devices, programs, applications, and specialized equipment**	**Adaptive-creative, independent of electronic devices, programs, applications, and specialized equipment**	
	Innovative Pedagogical Technologies for Classroom Work with Digital Tools (Individual and Group Work) – Specialized Interactive Audiovisual Software for Vocal Training, Studio Systems for Sound Recording, Processing, and Voice Monitoring, Digital Real-Time Voice Analysis	Combined Vocal-Pedagogical Technologies from Various Vocal Methodologies, Aimed at Individual and Group Work for Mastering and Refining the Vocal-Technical Aspects of Vocal Art	
	Innovative Pedagogical Technologies for Training with Digital Tools for Independent Work – Interactive Self-Instructional Modules for Sound Recording, Sound Modeling, and Sound Visualization of Performance, Adaptive Tasks for Self-Preparation, Interactive Accompaniment	Combined Vocal-Pedagogical Technologies from Various Vocal Methodologies, Aimed at Individual and Group Work for Enhancing Creative Interpretation, Improvisation, Personal Style and Authenticity, Artistic Expression of Performance	
	Innovative Pedagogical Technologies for Virtual or Hybrid Learning – Computer Systems and Platforms for Remote and Virtual Education, Online Lessons, Digital Resources, Work in Virtual Spaces	Combined Vocal-Pedagogical Technologies from Various Vocal Methodologies, Aimed at Integrating Other Stage Disciplines and Interacting with Elements from Other Arts	
	Progress Tracking Technologies – Digital Audio-Visual Portfolio Tracking the Learning Process, Storing Audio and Video Recordings, and Results from Periodically Conducted Diagnostics	Adaptive Scenarios and Specialized Tasks for Stage Performance, Experiments, and Interaction – Developing Individual and Group Artistic Capacity, Psychological Resilience, and Vocal Health	

2. CHAPTER TWO

MAIN CHALLENGES IN PEDAGOGICAL WORK FOR VOCAL SKILLS DEVELOPMENT IN HIGH SCHOOL STUDENTS AND NEW PEDAGOGICAL TECHNOLOGIES FOR THEIR OVERCOMING

Chapter Two provides a methodological approach to vocal activities with high school students, considering the various challenges associated with working with this specific age group, as identified through the review of vocal-pedagogical literature. It outlines the primary difficulties encountered in vocal-pedagogical work with high school students and presents both traditional and innovative technologies designed to overcoming them.

Additionally, a comprehensive innovative diagnostic file has been developed and presented to monitor students progress. It is a complex innovative diagnostic audio-visual system for tracking vocal skills during high school training in singing.

The following issues are outlined:

2.1. Vocal system. Physiological and psychomotor difficulties in vocal traing for high school students (beginner / intermediate level)

Vocal mechanisms and the function of the related organs is analyzed and explained in details. The main vocal-technical challenges encountered during high school vocal training are presented. Both traditional methods and innovative technologies for overcoming these challenges in specific vocal problem areas are proposed.

2.1.1. Incorrect singing posture

Correct singing posture is discussed as a main skill and important condition for good sound production. It provides stable breath support, optimizes breathing efficiency, and reduces muscle tension, which helps the singer to develop correct and healthy vocal technique and use their voice effectively.

2.1.2. Incorrect breathing and weak breath support

The issues resulting from improper breathing and weak breath support are analyzed. The significance regarded singers' breathing skills is outlined as a crucial aspect in the sound production process that they develop throughout their whole careers.

Different exercises from vocal-pedagogical literature are highlighted to improve the quality of breathing and breath support.

In the "Appendices," specific breathing and vocal support exercises from the works of A. Peham, R. Miller, and R. Campbell are presented.

2.1.3. Inaccurate intonation

Accurate intonation is one of the ultimate goals of vocal training and is analyzed at three levels of awareness – the performer's own actions, the specific environment in which the individual is placed, and a more abstract idea of the ideal performance. Active manipulation of pitch is the result of a complexly developed musical memory, musical abilities, and a good level of mastery of the vocal apparatus, which makes it a major challenge when working with beginner or intermediate singers.

Specific exercises for accurate intonation are proposed in "Appendices" and their innovative variations are presented.

2.1.4. Singing diction and articulation problems

Diction and articulation are basic singing skills and without their mastering singing could not have the same effect. They are similar concepts but refer to two different singing processes.

In the Appendices, selected from the specialized vocal training literature, many good and effective exercises and examples for the efficiency of articulation habits and skills are indicated and their innovative variations are proposed in this chapter of the study.

2.1.5. Uneven vocal registers and inefficient sound production during singing transition tones between vocal registers

Uneven registers and the inability to overcome transition tones lead to lack of vocal agility, to vocal rigidity, forced sound production, loss of tone strength and resonance, distortion in diction, disruption of

articulation and improper dynamic shaping. Also, rapid vocal fatigue and hoarseness can occur in untrained singer's voice. A clear example of differences in sound production across registers is observed exactly in the voices of adolescent beginner singers.

In Appendices, specific exercises for equalizing sound in thedifferent registers and overcoming difficulties in singing transition tones are presented and explained.

2.2. Anatomical and physiological changes of the vocal apparatus. Voice mutation in both sexes

The second section of Chapter Two examines the process of voice mutation in both sexes as a major difficulty in vocal training in the specific age group (13-19 years).

Analyses and conclusions based on the scientific research works of Professors John Cooksey and Lynn Huff-Gackle, as some of the leading figures in research on the topic of voice mutation, are presented. Also, a typology they created for determining the periods of mutation, subject to these specific criteria, as well as the classification of the stages of mutation in male and female voices in the specific age group is discussed in details.

2.3. Psychological challenges – emotional instability, excessive anxiety and stage fright

This section of Chapter Two outlines emotional instability, excessive anxiety and stage fright as the main psychological difficulties in forming vocal skills in high school students. Finding efficient solutions for these problem areas in vocal training is a matter of particular importance in the considered age group. Various traditional and innovative pedagogical technologies and strategies for dealing with these specific difficulties, are described. Any situation that could frighten and disturb the student is capable of leading to serious problems in all aspects of performance and significantly - slowing down the effectiveness of the vocal training process.

2.4. Lack of motivation

The particular reasons and factors leading to lack of motivation are outlined and presented. It is clear that vocal training faces many more

challenges than other subjects in high school education. Young people often do not feel sufficiently motivated and inspired by the topics covered in the curriculum and by the specified song repertoire in formal education systems.

The loss of motivation and desire to learn and perform music is also related to low self-esteem, lack of interest, the status of individual achievements or disappointments and, last but not least, the personality of the teacher.

2.5. Inappropriate repertoire selection

Other difficulties in singing training work with students in high school stage of education include difficulties in selecting propriate repertoire, which is of great importance for the success of vocal training. The repertoire must correspond to the current level of vocal development of the student and the limits of his range at the specific stage.

Innovative pedagogical technologies are presented, providing the opportunity for a more detailed analysis of each song for the purpose of a reasoned and informed choice of a suitable song repertoire.

2.6. Diagnostics and innovative audio-visual digital students' file for vocal progress tracking

Diagnostics is one of the most important elements for determining the level of vocal development of each student. It is a mandatory pedagogical tool, necessary both at the beginning of the pedagogical work and during its implementation over a longer period of time. Diagnostics is part of every educational process and outlines three factors, according to the established norms for assessment referring to specific criteria: basic stage of vocal development, current state of vocal development and analysis of results after training in singing.

Diagnostics, as a comprehensive system for evaluating and monitoring students' vocal development, assesses the level of their vocal competencies based on specific criteria, focusing on individual vocal-technical and psycho-motor skills, as well as their overall coherence and influence:

• Vocal-technical skills – assessment of singing breathing and breath support, accuracy of intonation, diction and articulation, sound quality in

different vocal registers, skills for overcoming transition tones between registers;

• Interpretation skills – assessment of the understanding and interpreting of the lyrics, the musical and artistic content of the song, personal style, stage behavior and performing artistry; artistic and aesthetic expressiveness of the performance;

• Psychological resilience – skills for overcoming stage fright, excessive anxiety, loss of motivation, lack of concentration.

2.6.1 Criteria and standards for assessing vocal development

Criteria and standards for assessing vocal development are indicated and considered *objective* and *subjective*. The objective criteria and standards include vocal-technical skills, artistic skills, knowledge and artistic awareness. The subjective criteria include the results of the personal aesthetic perception of the performance. Aesthetic perceptions and feelings in their depth and integrity shape the personal aesthetic taste, which is highly subjective, but fundamental for every artistic performance and its individuality.

2.6.2 Innovative digital audio-visual student's file for diagnostics

Innovative digital audio-visual diagnostics combines traditional diagnostic methods with new contemporary technologies for sound and image analysis, digital processing and data storage, in order to update, refine and complexly analyze the results in vocal training. It provides opportunities for more accurate identification of problems and anomalies in students, as well as optimizing the learning processes.

An innovative digital audio-visual diagnostic card has been developed in this study to help examining and tracking the progress of the vocal skills of high school students. It represents a personal digital file of each student and provides a complex multi-layered assessment of the vocal development, uniting specific objective and subjective criteria and factors. It also contains a column "Self-assessment", emphasizing the importance of forming the ability for critical assessment and self-

evaluation in the learning process, based on broad awareness in various areas of vocal performing arts.

2.7 Computer programs, mobile applications and electronic devices in contribution to the contemporary vocal coaching

Both professional and open-access programs for sound recording, sound processing and real-time voice monitoring are used in the educational process and in the pedagogical practice of the author of the study. Both types of computer programs and mobile applications can be fully used by high school students after a brief training and instructions. The use of specialized music software and hardware is dictated by personal and scientific interest in innovative approaches and pedagogical technologies for developing students' vocal skills.

The main criteria for selecting specific applications and programs in the study are the presence of functions for remote and independent use, the option of open access to the software, as well as functions for developing specific competencies, analysis and tracking of results. No other programs and applications were considered beyond those applied in the author's personal practice and the conducted pedagogical experiment.

2.7.1 Software and apps for sound recording and audio processing

This section outlines the specific application of specialized audio software such as ***Audacity, Logic Pro, Melodyne, Cubase 10.***

2.7.2 Mobile applications for independent vocal tasks – warm-ups, developing vocal-technical skills, expanding the repertoire.

This section describes the specific application of the following apps: ***Erol Singer's Studio, Pitch Monitor, Vocalista u Swiftscales Vocal Trainer.***

3. CHAPTER THREE

AN EXPERIMENTAL STUDY OF INNOVATIVE PEDAGOGICAL TECHNOLOGIES FOR THE DEVELOPMENT OF VOCAL SKILLS IN HIGH SCHOOL STUDENTS

3.1. Pedagogical experiment

The pedagogical experiment was conducted over the course of one academic year (2022–2023) with a total of 12 participants—students from the 9th and 10th grades of Ivan Vazov Language High School in Plovdiv. The participants were evenly distributed into two groups: An Experimental Group (EG) and a Control Group (CG), each consisting of six students.

The students attended two additional weekly music lessons (elective classes) in which they received both group and individual training in the fundamentals of vocal art at a beginner level.

The experiment was carried out under the standard conditions of the educational process at Ivan Vazov Language High School in Plovdiv, in accordance with the curriculum and syllabus of the elective music classes. The total instructional time for each group amounted to 72 academic hours per year, evenly distributed across two academic terms (36 hours per term).

The training of both the Experimental Group (EG) and the Control Group (CG) was conducted simultaneously within the same time frame. Both groups were assigned identical tasks; however, the EG implemented these tasks using the innovative technologies proposed in the study, whereas the CG relied on standard vocal-pedagogical techniques established in practice.

The musical examples for vocal-technical exercises and song repertoire, used for student assessment, remained consistent across all three stages of the experiment: the initial diagnostic stage, the formative stage, and the final evaluation stage.

Conducting a pedagogical experiment in the field of innovative vocal pedagogy within natural educational settings presents a highly complex research challenge. The successful implementation of such an experiment is directly dependent on the availability of specific electronic devices,

computer hardware and software, as well as specialized recording and sound modeling equipment.

3.1.1. Initial Diagnostic Stage

During the initial diagnostic stage, the participants were assigned to two groups—the Control Group (CG) and the Experimental Group (EG).

The primary objective of this stage was to assess the specific skill level of each student in both groups (EG and CG) and to determine their existing performance-related knowledge and competencies. This assessment was of paramount importance for the effective implementation of the experiment.

The diagnosis of the students' performance-related knowledge and skills was conducted using the innovative diagnostic questionnaire for vocal evaluation and self-assessment, as proposed in Chapter Two.

Objectives in the initial stage:

Determination of the initial level of each ttudent in both groups (EG and CG) through:

- Comprehensive diagnostic assessment (in the teacher's evaluation section) based on all indicators outlined in the assessment file;
- Self-assessment diagnosis (in the self-evaluation section) providing an overall score recorded in the file;
- Specification of the Assessment System and Evaluation Criteria to be applied consistently across all three stages of the study.
- Analysis of the diagnostic results and formulation of conclusions based on the observed data and findings.

Subsections 3.1.1.3 - 3.1.1.7 - the methods of assessment across the three stages of the study were clearly defined, along with the evaluation system, diagnostic indicators, assessment criteria for each indicator, and the percentage-based conversion of grades.

The **15 key assessment criteria** are categorized as follows:

1. **Vocal-Technical Indicators:**

- Singing posture
- Breath control and support
- Accuracy in intonation
- Vocal diction and articulation
- Register equalization and transition skills
- Tone attack
- Phrasing and dynamics

2. **Artistic-Interpretative Indicators:**

- Ability to understand and convey text and meaning
- Ability to understand and express genre-specific characteristics
- Improvisational skills
- Individual style and authenticity
- Stage presence – visual aesthetics, artistry, impact, and audience engagement
- Ability to apply nuances, expand interpretation, and experiment

3. **Psychological Resilience:**

- Stage anxiety and performance-related stress
- Personal motivation and concentration

4. **Additional Indicator:**

- **Self-assessment**

Subsection 3.1.1.8 presents ten musical examples of vocal-technical exercises used for the purposes of the experimental study and the diagnostic assessments conducted across all three stages of the research.

Subsections 3.1.1.9 and **3.1.1.10** outline the **song repertoire** selected for the experimental study and detail the **distribution of students** into the Control Group (CG) and the Experimental Group (EG).

The **results and analysis** from the initial diagnostic assessment of the CG and EG are documented in subsections **3.1.1.11, 3.1.1.12, and 3.1.1.13**.

Subsection 3.1.1.14 presents a **comparative analysis** of the results obtained from both the Experimental Group (EG) and the Control Group (CG).

CONCLUSIONS AND ANALYSIS OF THE INITIAL STAGE RESULTS

The results from the CG and EG indicate that the distribution of students' vocal competencies across the various assessment indicators is **similar and relatively balanced**. The differences in individual scores for the various criteria vary among students but do not exceed **1.00 unit**, suggesting that these variations are minor and can be quickly and effectively compensated for.

Consequently, in order to enhance the **level of vocal performance technique**, it is essential that the subsequent training process incorporates **technologies that ensure proportional development** of all its constituent elements.

The **vocal competencies and potential** of students in both groups are at a **sufficiently high level**, with only minor exceptions. This provides a solid basis for the conclusion that the students **possess the necessary qualities and the capacity for vocal development**. Moreover, they have the potential to achieve **high-level artistic performance**, provided that their **vocal-technical and artistic-interpretative skills** continue to be improved and refined.

3.1.2. Middle (developmental) stage

The **formative stage** of the experimental study provides a detailed description of the **specifics of vocal-pedagogical work** with both the Experimental Group (EG) and the Control Group (CG), as well as the results of ongoing observations. These aspects are systematically outlined in subsections **3.1.2.1 – 3.1.2.3**.

The **innovative methodology** applied in the training of the EG is thoroughly explained, along with the **specific programs and applications** utilized during the experimental training period.

Subsections **3.1.2.4 and 3.1.2.5** present and analyze the **results of the intermediate diagnostic assessment** of the students, followed by **conclusions and generalizations** regarding the progress of both groups.

At this stage, a **faster rate of development and more significant results** are already observed in the **Experimental Group**, indicating the **effectiveness of the applied innovative methods**.

Based on the observations and recorded results, the following conclusions and pedagogical strategies can be applied:

1. **Exercises forming vocal breathing, support, articulation, and diction** should be the primary focus for students when laying the foundations of their vocal-performance skills, especially at the beginner level. Proper breathing and vocal setup are crucial, as they impact the success of all other exercises that develop other aspects of vocal mastery.

2. **Exercises for pitch accuracy**, developing pitch sense, melodic ear, range extension, and overcoming transitional tones should be gradually and progressively included. Throughout this process, attention should be paid to singing posture, tone attack, phrasing, and dynamics.

3. If one or more of the **vocal-technical elements** is not well mastered, deficiencies will be evident in other areas of vocal art. Therefore, it is important not to move on to new exercises without ensuring that previous ones have been thoroughly mastered.

4. The **vocal-technical elements** should be introduced step-by-step, as introducing more than one element simultaneously can hinder the process of mastering them.

5. The exercises used in the training process require high concentration and physical mobilization, which may sometimes exhaust the student. A suitable strategy here is to incorporate **short breaks**, involving a relaxing dialogue or brief rest activities that allow the student to physically and vocally recover while briefly diverting attention away from the training process.

6. The most significant challenge in vocal-technical terms and the greatest challenge for the teacher is **balancing the students' vocal range** and overcoming transitional tones. Exercises in this area should be carefully integrated into the pedagogical routine with a personalized approach in each case. The song repertoire should be selected carefully, ensuring that the tonalities of specific songs lie within the student's comfortable working range.

7. All established steps should be followed when learning a new song: careful preparation, familiarization with the lyrics, content, and genre-specific features, along with strict monitoring of the student's correct habits during the performance. Different tasks from various aspects of **artistic-interpretative elements** of performance art—such as dynamic building, expansion, experimentation, artistry, personal style, and authenticity—should be applied to the same song.

8. **Improvisation** is one of the more complex elements of performance art and poses a significant challenge for students. It would be beneficial to initially work with improvisation on just a few bars or phrases of a song, using a well-known melody and text. This could involve free singing or small variations in the melody of the chorus or verses.

9. A **lack of sufficient knowledge, skills, and performance experience** diminishes the quality of performances in front of an audience and intensifies stage fright and anxiety. It is essential to **increase students' theoretical knowledge**, as this improves their practical skills, boosts self-confidence, motivation, and self-assessment, which positively affects stage fright and reduces excessive anxiety.

10. Given the time required to develop **personal style**, authenticity in performance, artistry, communication with the audience, and overcoming stage fright, these components of performance mastery need to be **constantly monitored** in various performances throughout the training period, particularly during concerts.

*3.1.3 **Final stage***

The **final conclusive stage** of the experimental study concluded with a **diagnostic assessment** conducted at the end of the 2022-2023 academic year, summarizing all the data collected throughout the experiment.

The **indicators**, **assessment system**, and **evaluation criteria** used in the diagnostic process during the concluding stage are identical to those applied in the **initial (diagnostic)** and **formative** stages.

In addition to the previously outlined indicators, an **additional indicator** was introduced for the author's purposes: **"Speed of forming vocal habits and skills."**

Objective of the Concluding Stage:

To assess the effectiveness of **innovative pedagogical technologies** in developing vocal skills among high school students, by comparing the results of the **comprehensive diagnostic assessments** conducted during the **initial, diagnostic**, and **concluding stages** of the experiment.

Tasks for the Concluding Stage of the Experimental Study:

1. To carry out a **final diagnostic assessment** by evaluating all indicators related to **vocal-technical** and **artistic-interpretative** competencies at the end of the academic year.

2. To **analyze and compare** the results from all three stages of the experiment.

3. To draw **generalizations and conclusions** based on the results, **confirming or rejecting** the hypothesis of the study.

3.2 Pedagogical experiment - conclusions

After analyzing the results obtained from conducting the pedagogical experiment, the following conclusions can be made:

1. The effectiveness of the practical application of the proposed innovative pedagogical technologies for developing vocal habits and skills in high school students is certainly demonstrated by the higher results achieved by the experimental group in the final stage, compared to the initial diagnostic stage. Additional evidence of the effectiveness of the proposed technologies is provided by the results of the supplementary indicator, "***Speed of mastering vocal habits and skills***," obtained in the experimental group.

2. The effective application of innovative pedagogical technologies for developing vocal habits and skills in high school students could be realized if the specific technologies are implemented in the educational process in harmony with all established vocal-pedagogical methods and technologies for developing vocal habits and skills.

3. The development of vocal habits and skills in students through the proposed innovative pedagogical technologies contributes to improving the quality of their vocal technique, increasing their motivation and personal concentration, and helps significantly to overcome stage fright and excessive anxiety during performance.

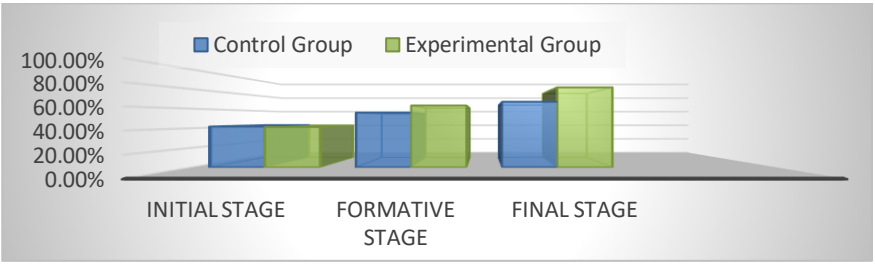
4. The modernization of vocal-pedagogical activities makes the educational process more engaging, dynamic, and flexible, while also fostering greater competencies in students (technical proficiency in working with specialized hardware and software, knowledge and skills in sound recording, video recording, and sound processing).

5. The proposed innovative pedagogical technologies enhance the accuracy of personal self-assessment, which fosters critical thinking and is a crucial element in the processes of self-improvement and development of students. Evidence of this is the difference between assessment and self-assessment in the experimental group at the initial stage and the changes observed in the final stage – with the assessment and self-assessment aligning to an accuracy of up to 0.02%.

These conclusions complete the final task set in the concluding stage of the pedagogical experiment, thus proving the remaining part of the research hypothesis, which transforms it into a thesis, namely:

Innovative pedagogical technologies for developing vocal habits and skills in Bulgarian high school students contributes to:

- Improving the effectiveness of vocal training at this age and mastering the art of singing;
- Enhancing the overall technical development of students and improving their artistic performance;
- Boosting self-confidence, self-control, motivation, and the desire for vocal development in students at this age;
- Modernizing and enriching vocal-pedagogical technologies for developing vocal habits and skills, assisting vocal teachers.



CONCLUSION

The study of the problem of the formation of vocal habits and skills in high school students in the Bulgarian secondary school showed the following results, witch lead to the conclusions:

For now, no comprehensive and detailed system of innovative technologies for developing vocal habits and skills in high school students in our country has been established. The available vocal-pedagogical literature lacks an in-depth analysis of contemporary vocal-pedagogical technologies. The existing literature in the field of vocal pedagogy:

- follow fully established traditional methods and technologies for the formation of vocal habits and skills;

- focuses on established and proven methods and technologies for the formation of vocal competencies and do not consider the issue of modernization and implementation of new ones;

- do not define in detail what innovative technologies could be implemented in vocal training;

- do not specify in detail the issues related to the use of new modern computer hardware and software as a training tool;

- do not specify the issues related to the use of mobile devices and their widespread application as a learning tool;

- do not sufficiently discuss the methods and technologies for online vocal learning, although they are extremely necessary, considering the

increasingly frequent transition of formal education in schools from face-to-face to online studying.

The vocal-technical, artistic-interpretative elements, and psychological aspects of performance art are equally significant components of vocal mastery. Their integrated development enables learners to refine these aspects as a unified whole and maintain full control over their voice in all its dimensions.

Combining classical pedagogical methods and technologies in vocal training with modern innovative approaches has proven its effectiveness in fostering a deeper understanding and acquisition of vocal habits and skills.

Vocal pedagogy is constantly evolving, continuously updating its methods and teaching technologies in alignment with the dynamic demands of the contemporary music industry.

CONTRIBUTIONS OF THE STUDY

Various features of vocal education of high school students have been analyzed in detail, taking into account the complexity and difficulty of this process at this specific age. All psychological, physiological and anatomical issues in the age range (from 13 to 19 years) have been considered and evaluated.

A detalied classification of innovative pedagogical methods, technologies and approaches in vocal training, according to their methodology and their pedagogical tools, has been developed and applied in the practical work of the author. The dissertation provides a structured and comprehensive view of innovations in vocal pedagogy today.

A system of innovative technologies designed to help etsablishing vocal habits and skills in high school students has been developed and applied for the first time in secondary school and represents a complex base from which various elements of singing art can be extracted, corresponding to a specific stage of education, according to the level of students. It can be considered an integrated system of related components that combine the vocal-technical, artistic-interpretative, and psychological growth of students. Observations in the personal author's pedagogical practice show that many modern vocal pedagogues use

innovative technologies in their work, but there is no methodology for a complex and systematic use.

New and contemporary pedagogical technologies for synchronous work on individual aspects of singing art are proposed, which allow quick and highly effective vocal progress of students, as well as its remote monitoring. The developed innovative technologies are entirely universal in nature and applicable to all students at high school level, both in face-to-face and distance learning. They combine basic principles of vocal pedagogy with specific, individual cases and stages of vocal training technologies.

The use of new modern computer hardware and software, as well as mobile devices and their wide application as a training tool, is defined in detail; methods and technologies for online vocal training are proposed, considering the increasingly frequent transition of formal education in schools from in-face to online learning.

Fully based on the author's personal both pedagogical and singing experience, a systematic approach to development of vocal habits and skills has been presented. It integrates new and modern technologies and reflects the requirements of the modern music industry for contemporary young singers with a high level of motivation and technological culture.

The present scientific work has a wide practical application and aims at supporting the vocal-pedagogical practice of a large audience - vocal pedagogues, music teachers in formal education schools or private educational centers, teachers in additional forms of training, leaders of vocal ensembles.

PUBLICATIONS ON THE DISSERTATION'S TOPIC

„ANALYSIS OF THE PROBLEM OF INCORRECT INTONATION AMONG HIGH SCHOOL STUDENTS AND APPROACHES FOR IMPROVEMENT"

„INNOVATIVE PEDAGOGICAL TECHNOLOGIES AND APPROACHES IN CONTEMPORARY VOCAL EDUCATION FOR MASTERY OF FUNDAMENTAL SINGING TECHNIQUES"

„OBJECTIVE AND SUBJECTIVE EVALUATION OF THE ARTISCTIC-AESTHETIC EXPRESIVENESS OF VOCAL PERFORMANCE"