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Formation of Students' Health Culture through Innovative Technologies of Artistic and Creative Music Education

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Abstract: *The paper dwells on an urgent problem of music and music-pedagogical education in terms of Ukraine and other countries worldwide - the formation of students' health culture by means of innovative technologies of artistic and creative music education. The objective of the paper is to highlight the results of an experimental study of the formation of students' health culture by means of innovative technologies of artistic and creative music education. Correspondingly, to study the problem, the following scientific research methods were employed, such as: a range of scientific approaches: cultural, competence and technological ones; a set of theoretical methods: deduction and induction, analysis, comparison, specification, classification, systematisation; modelling and generalisation; as well as empirical methods: observation, survey, tests, creative tasks, comparison, evaluation, didactic games, pedagogical experimenting along with mathematical statistics. The concept of student's health culture has been defined as a systemic, dynamic formation of the student's personality, provided by a set of worldview values for human health and knowledge, skills, and abilities aimed at hygiene and health protection of oneself as well as others in both in-class and extracurricular educational activities. Consequently, the structure of the student's health culture is substantiated by four groups of criteria that correspond to the components of this phenomenon. The paper introduces the implementation of technologies for using musical plasticity development and artistic-breathing training, teaching musical improvisation and music creation, musical and artistic transformation, including artistic and creative reflection. Hence, the experiment to develop students' health culture through innovative technologies of artistic and creative music education was conducted. The effectiveness of these technologies in developing this phenomenon was experimentally verified and proven.*

Keywords: *culture, health culture, cultural competence, technology, technology of music teaching, technology of artistic and creative music education, music art teacher, students' artistic and creative competence.*

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Introduction (Problem statement)

The economic growth, technological transformation of the living space, as well as global environmental changes have resulted in a decline in children's physical activity worldwide, a lack of understanding of a healthy lifestyle value, along with a deterioration in health culture. The latter is a matter of concern, particularly in light of the UN Convention on the Rights of the Child (UNCRC, 1989), which underscores the importance of protecting and preserving health culture. In order to cultivate a health culture among students of general secondary education, it is essential to prioritize the development of a value-based attitude towards health and a healthy lifestyle among children and youth. This entails enhancing their awareness and skills in positive self-motivation, maintaining physical health, harmonizing psycho-emotional state, resisting stress, and mitigating the impact of negative accompanying factors.

The improvement of child health, which is a societal priority, is contingent upon the interplay of political, economic, scientific, educational, social, and cultural factors at the national level. In Ukraine, the solution to these problems is emphasized in a set of government documents, including: the National Strategy for Reforming the Healthcare System in Ukraine for the Period 2015-2025 (2014), the National Strategy for Healthy Physical Activity in Ukraine for the Period up to 2025, entitled " Physical Activity - Healthy Lifestyle - Healthy Nation" (2016), and so forth. In particular, statistics from the Ministry of Education and Science of Ukraine show that the number of inclusive classes for children with special educational needs in general secondary education institutions has increased by 6105 classes over the past five years (2021-2024), and the number of students - by 7668 (Website of the Ministry of Education and Science of Ukraine. Inclusive Education, 2024). Military conflicts that are currently taking place in the Middle East, Eastern Europe and other parts of the world have a particularly negative impact on the health, motivation and quality of teaching children a healthy lifestyle in general secondary education institutions, causing physical and emotional trauma, displacement to other regions of their own or another country, etc. Current international research conducted by the scientific community in various scientific fields, such as anatomy and physiology, hygiene and medicine, psychology, pedagogy, physical education, art history, etc., is aimed at improving the effectiveness of work with traumatic and post-traumatic physiological and psycho-emotional conditions of children as a result of war impact on them.

The potential of musical art application, as conceptualized by scientists within the context of receptive, active, and integrative forms of music therapy, has recently emerged as a particularly salient approach in the context of mitigating children's stress-related challenges. The extrapolation of music therapy technologies in Ukrainian general secondary education institutions at music lessons is limited to the occasional use of receptive music therapy methods. These methods entail the passive listening of soothing music by children, with less frequent instances of active listening, which involves the inclusion of children in musical performance and integrative practices engaging various art forms. This approach contributes to improving the psycho-emotional state of children, but does not sufficiently ensure that students are aware of the importance of a value-based attitude to health culture and the ability to overcome the results of constant stress. Therefore, in our opinion, there is an urgent need to introduce innovative technologies of artistic and creative music education of students in general secondary education institutions around the world, through algorithms of their cognitive, artistic and creative activities in the process of active music making, aimed at forming health culture, creative self-expression, and artistic communication in children under martial law.

Thus, the solution to the problem of forming students' health culture by means of innovative technologies of artistic and creative music education is outlined in the article in such aspects as: highlighting the value of forming children's health culture in the modern global space; theoretical analysis of scientific literature in the context of this problem and outlining the conceptual apparatus of the study, namely: 'health', "healthy lifestyle", "health culture", "technology", "artistic and creative technology"; identification of components of the structure of students' health culture and criteria for determining the levels of this phenomenon formation in children; substantiation of the essence and functional integration of innovative technologies of artistic and creative music education in general secondary education institutions; analysis and interpretation of the results of a pedagogical experiment to test the effectiveness of forming students' health culture through innovative technologies of artistic and creative music education in terms of general secondary education institutions.

Literature review

The issue of forming a health culture, which is part of universal culture, is becoming an increasingly prominent subject of scientific research by modern scholars worldwide. A review of contemporary scientific literature reveals a diversity of perspectives on the concept of "health." Y.

Boichuk, for instance, defines it as "a holistic dynamic state characterized by certain reserves of synergistic, plastic, and regulatory provision of functions, resistance to the influence of negative environmental factors, and is the basis for the performance of social and biological functions" (Boichuk, 2017). According to Boichuk (2017) and Vysotska & Romanenko (2022), the contemporary understanding of health entails a holistic approach to its definition, emphasizing the interrelationship between the body and the environment. The human body is conceptualized as a complex system of physiological and psychological processes that are inextricably linked with external factors (Vysotska & Romanenko, 2022).

Of great importance for the study of the formation of health culture in secondary school students by means of innovative technologies of artistic and creative music education were the works of scientists on the substantiation of the essence of personality health culture (Gavrylkevych & Kruk, 2006; Zamrozevych-Shadrina, 2021; Olender et al., 2010; Surmyak, Kudryk, 2012; Khalaitsan, 2014); the content and significance of students' health culture (Potashnyk, 2010; Smolyar & Vakhnova, 2017; Liakhova, 2019).

On applying methods of comparison and analysis, the study of modern scientific thought on the concept of personality health culture has identified its main interpretations, including: according to V. Havrylkevych and S. Kruk, health culture is a complex phenomenon that is closely related to human society and activity. It reflects a certain level of development of human consciousness and contains achievements of theoretical and practical experience in the field of health formation, preservation, and strengthening. Additionally, it is a characteristic of a particular personality that reflects the degree to which they have implemented this experience in their daily life to achieve good health (Gavrylkevych & Kruk, 2006); Olender et al. (2010) share a similar opinion and notes that the culture of personality health is an important component of the general culture of a person. This is due to the material and spiritual environment of society, which is expressed in the system of values, knowledge, needs, skills, and abilities that form, preserve, and strengthen one's health (Olender et al., 2010). Surmyak and Kudryk define health culture as a comprehensive system of personal attributes, encompassin worldview, spirituality, values, knowledge, skills, and abilities that orient an individual towards a healthy lifestyle and ensure optimal health. Health culture encompasses spiritual, psychological, medical, hygienic, and physical aspects that are closely interrelated (Surmyak & Kudryk, 2012). As claimed by Khalaitsan (2014), health culture is a component of physical culture that involves knowledge, skills, and abilities

to lead a healthy lifestyle, engage in psychological self-improvement, and promote social and physical development. Zamrozevich-Shadrina proposes that health culture be regarded as a constituent element of the individual's general culture. This integrative quality encompasses a system of knowledge pertaining to health as a socio-cultural phenomenon, the components of a healthy lifestyle, and a system of value orientations and awareness of the personal significance of these elements. The value of health as a necessity for personal self-development is evident in the ability to consciously develop an individual strategy for the preservation and development of health, which is manifested in health-saving behavior (Zamrozevych-Shadrina, 2021). We consider the concept to be a complex phenomenon that includes personal and social characteristics and is reflected in a person's ability to lead a healthy lifestyle.

In the Ukrainian pedagogical science the concept of students` personality culture is paid great attention to, namely Smolyar & Vakhanova (2017) comprehensively consider the concept of health in the unity of biological, social and psychological aspects, which helps to determine the meaningful essence of students' health culture; Liakhova (2019) interprets this concept as a branch of students` special activity to master the material and spiritual values of humanity in the learning process, which they use to form, strengthen and preserve physical, mental and spiritual health, which is manifested in healthy behaviour that has become their way of life. The result of this activity is the observance of a healthy lifestyle led by students, which has a positive effect on their health. Close to our understanding is the opinion of I. Potashnyk who believes that fostering and formation of students` health culture in general education institutions (content, organisation, means, forms, methods of teaching) should be based, on the one hand, on the principles of modern pedagogy and the main provisions of the reform of general secondary education, and, on the other hand, on the hygienic principles of students' health protection in modern socio-economic conditions (Potashnyk, 2010).

Undoubtedly, the psychophysiological effects of music therapy on children's health have been the subject of numerous studies conducted by Ukrainian and foreign scientists. A Ukrainian scientist V. Shulyar expediently proposes the use of the receptive form of music therapy in its communicative and regulatory manifestations, including joint listening to music, instrumental vocal movement improvisation combined with physical movements, and an active form involving the use of music therapy technology. This active form includes writing music for a literary text, performing a musical piece to the words of a writer, and reproducing the

mood of a work of art in general and literary characters in particular with sounds, colors, gestures, and other means (Shulyar, 2022). However, the researcher does not focus on the conscious and independent use of music therapy by children to overcome mental or physical health problems.

In fact, Z. Tkemaladze and O. Zolotareva highlight that a range of therapeutic modalities, including music therapy, aesthetic therapy, vocal therapy, sound therapy, fairy tale therapy, dance, and others, can influence health outcomes. Scientists have demonstrated that the use of specially organized sound combinations and rhythmic intonations of music, in accordance with the principles of composition, can effectively convey a range of moods and emotional states, including joy, fun, cheerfulness, sadness, tenderness, confidence, and anxiety. Additionally, these techniques can be utilized to reflect and evoke intellectual and volitional processes (Tkemaladze & Zolotareva, 2021). We consider the comprehensive use of these technologies in scientists' research to be positive, however, their research is not aimed at developing students' independence in using technologies for positive adjustment and improving their health.

Raymond Birane Youm, Kadidiatou Diarra, Mathias Pouye, and Jean Augustin Diegane Tine emphasize that different music therapy techniques are adapted to the respective populations with problems of psycho-emotional disorders, social or behavioral difficulties, sensory, physical, or neurological disorders. The most prevalent techniques are the utilisation of "receptive" music (listening to recorded music followed by discussion, drawing, and dancing) and active music (creating music, singing, or playing an instrument; employing well-known songs and improvisation). The most effective strategies include the following: the initial approach is to facilitate the transfer of knowledge and enhance well-being by gradually introducing increasingly complex concepts. This approach allows young people to express themselves through the communicative properties of music. During the performance of the melody, the teacher implements a strategy of inducement that creates an atmosphere of trust and relaxation, thereby increasing the young person's self-esteem (Youm et al, 2024). At the same time, the study does not indicate how students can use the means of musical art to harmonise their internal emotional state.

In our opinion, a typical feature of modern research on music therapy technologies is the disclosure by scientists of their own positive experience of using them in working with children. However, scientific works do not focus on the importance of students' mastering the knowledge and skills to consciously and independently apply artistic music creation

technologies for their own needs related to the preservation of their own health.

In particular, Ming Yang, Zhibing Zhong, and Yi He employ the therapeutic modality of music, utilizing a pentatonic scale comprising five sounds that resonate with the five senses. This harmonious balance facilitates bodily resonance and spiritual calm (Ming Yang et al., 2021).

In his research, Nigel Osborne reveals the positive experience of using active music therapy technology with adults and children who have psycho-emotional trauma, including those who have been in the zone of military conflicts, which consists in creating musical compositions with words, songs with the reproduction of internal experiences. Such compositions can be created by one person or collectively. And they must be performed in public, for which N. Osborne involved orchestras, instrumental ensembles, etc. During the creation and performance of music, the participants in the creative process experienced catharsis, a sense of purification, liberation from anxiety, fear and depression (Osborne, 2017).

Daniel Johnston, Hauke Egermann, Gavin Kearney, Teppo Sarkamo propose the use of innovative computer technologies with the use of musical arts that go beyond interactive music therapy and can replace traditional technologies for working with people with authentic disabilities and socialization problems. These technologies include the use of mobile devices and specialized computer programs (Johnston et al., 2018).

The research of Kat R. Agres, Katrien Foubert, and Siddarth Sridhar elucidates the beneficial and detrimental aspects of employing contemporary music technologies in conjunction with music psychology and neuroscience. The researchers put forth the following digital technologies: data analysis for music (therapeutic) research and practice, for the purpose of analyzing patient behavior during interventions; biomarkers employed in research to gain a deeper understanding of biological responses to an array of musical stimuli; kinematic analysis, including data recorded through the use of motion capture technologies; the identification of significant moments through the application of automatic pattern detection theory – during music therapy sessions to identify "moments of interest" (Agres et al., 2021).

Medium (Ruler in pace, 2024) believes that one of the most notable developments is the use of virtual reality (VR) in music therapy. This technology (VR) immerses people in a virtual environment that enhances the therapeutic experience. The integration of multimodal technologies (e.g., combining artificial intelligence with virtual reality or biometric feedback) has the potential to create interesting and customized therapeutic environments. According to the researcher, the versatility of artificial

intelligence in music therapy creates broad prospects for an inclusive and effective approach to mental health care. According to the researcher, the intersection of artificial intelligence and music therapy represents the frontier where innovation meets compassion (Ruler in pace, 2024). A similar position is held by Kristine Yan, who notes that today music therapy with artificial intelligence is becoming a serious competitor to traditional music therapy, which faces three serious problems: personalization, cost, and lack of active therapy (Yan, 2023).

As a matter of fact, the analysis of current scientific works of foreign and domestic scientific experience has shown that: the technologies proposed by scientists using musical art are aimed at restoring children's health, harmonizing their psychophysiological state, forming social and communication skills, overcoming the consequences of stressful situations, but do not ensure the formation of values, knowledge, skills, abilities to maintain health throughout life through artistic musical creativity. However the formation of a health culture among students through innovative artistic and creative music education has yet to be studied in depth. The solution of this issue will enrich international music pedagogical thought with new theoretical and practical knowledge on the formation of students' health by means of innovative technologies in artistic and creative music education and will significantly affect the development of health preservation education for children in different countries worldwide. Therefore, the aim of the paper is to highlight the results of an experimental study of the formation of students' health culture through innovative technologies of artistic and creative music education.

Methodology

Aiming at investigating the problem, a number of scientific research methods were employed, including cultural, competence, and technological approaches, namely: a set of scientific approaches: cultural, competence and technological, which helped to define the essence of the concepts "student`s health culture", "cultural competence", "artistic and creative competence", "technology of artistic and creative music education" and to substantiate the structural components and criteria for assessing the formation of student`s health culture; a combination of theoretical methods: deduction and induction, analysis, comparison, specification - to determine the essence of the key concepts of the study; classification - to clarify different types of technologies of artistic and creative music education; systematisation - to substantiate the component structure of students' health culture; modelling and generalisation - to determine the criteria for assessing the formation of

students' health culture; a range of empirical methods: observation, survey, creative tasks, comparison, evaluation - to determine the levels of students' health culture formation.

In order to test the efficacy of forming students' health culture by means of innovative technologies of artistic and creative music education, we conducted a pedagogical experiment during the 2022-2023 academic year. The number of students who participated in the study was 48 in total, including: 22 students of the experimental group and 26 students of the control group. The experiment included: ascertainment, formative, and control-and-evaluation stages. At the ascertainment stage, the current level of formation of students' health culture was determined, which was associated with the creation of new author's methods for diagnosing the components of the structure of this phenomenon, namely: the questionnaire "Need for Health" to determine the level of formation of the motivational and cultural component of students' health culture; tests "Value of Health Knowledge" to determine the level of formation of the cognitive and knowledge-based component; creative tasks to determine the level of formation of the creative and technological component of health culture. At the formative stage of the experiment, the following methods were employed: pedagogical observation, conversation, training, survey, creative tasks, and didactic games. These were utilized to instill health culture in children within the context of general secondary education institutions. This was achieved through the integration of innovative technologies in artistic and creative music education, both within the classroom and beyond. The implementation of musical and artistic activity, artistic-breathing trainings, instruction in musical improvisation and music creation, musical-artistic transformation, and artistic-creative reflection facilitated the assimilation of the aforementioned concepts. To substantiate the reliability of the formative experiment's outcomes, the chi-square test, a method of mathematical statistics, was employed.

Results and discussion

The carried out theoretical analysis of the research, the employment of the cultural approach provisions regarding the need for the presence of worldview values in the phenomenon of culture, along with methods of comparison and specification allowed us to reveal that *a student`s health culture* is a dynamic and systemic formation of the student's personality. This is achieved through a set of values that promote human health, as well as knowledge, skills, and abilities aimed at hygiene and health protection in both classroom and extracurricular activities. Overall, students in general secondary education institutions attend life safety classes, but observations

of post-stress behavior and emotional disorders in children who have experienced the effects of war have shown that coping with their condition is laborious. Mechanisms to influence the negative effects of long-term stress are still being sought for.

Undoubtedly, music has a significant impact on the formation of students' health culture. S. Larson's study explores the method of integrated music learning, which presents a model of musical knowledge correlations based on the words 'fingers', 'eyes', 'mind', 'voice', 'ears', 'heart', and 'feet'. The model allows students to define their own categories. When studying each topic, it is essential to not only identify the appropriate words from the list but also to integrate them appropriately (Larson, 1995). V. Langfeldt argues that a holistic perception of music requires the integration of multiple senses, including sight, hearing, smell, taste, and touch. These senses are not isolated from each other, but work together in a complex way. Music should be understood as an integrated system that combines sensory, motor, and introspective states (Langfeldt, 2023). N. Quigley relevantly suggests that musical creativity has the potential to alleviate physical and emotional pain. It is important to create a safe educational environment for this purpose. The perception of art is more closely linked to human sensuality than aesthetics (Quigley, 2023).

In this context, the scientific experience of Nigel Osborne, a British composer and professor at the University of Edinburgh, who worked with children during the military events in the 1990s in Bosnia and Herzegovina, in the late twentieth and early twenty-first centuries in the Balkans, the Caucasus, the Middle East, East Africa, Southwest Asia and India, and since 2022 in Ukraine, is important. He has been implementing therapeutic technologies using art and music, including children's compositions in which they express their emotions. The scientist proved that the creative realization of children through the creation of music contributes to the harmonization of their inner state, has a positive effect on the emotional sphere and improves communication skills (Osborne, 2017).

Evidently, the scientists who study the impact of musical art on human health should note the fact that the inner world of a person is harmonised with their physical body precisely because of music, its specific nature, the presence of melodic, rhythmic, timbre, harmonic, and vibrational spheres. Musical art can convey the entire spectrum of emotions (positive as well as negative), characteristics of actions and movements (decisive, uncertain, inert, slow, fast) that is inherent in a person, it opens channels for regulating emotional states of a person and regulates them through aesthetic experiences. Consequently, music has a particularly significant impact on the emotional sphere of children.

The research conducted has demonstrated that music has a positive impact on restoring the balance between nervous excitation and inhibition, as well as alleviating symptoms of depression. Active music lessons, particularly for children, can enhance their engagement in musical creativity and expose them to highly artistic musical works. It is important for children to understand the healing effects of musical creativity and the mechanisms used to preserve their psychological health, as well as to acquire knowledge, skills, and abilities aimed at hygiene and health protection for themselves and others. Prospective teachers should master health education technologies and the ability to foster a health culture. On the whole, scientists link future specialists' training to their ability to improve psychological and socially significant traits in students. These include emotional self-management, conflict resolution capability, sociability, active listening, interpersonal relationship building, avoiding misunderstandings, demonstrating tolerance, providing mutual assistance, and achieving consensus in joint educational activities, such as singing in particular (Yuan Shaoqiang, 2022). Therefore, in music lessons and extracurricular activities, a music teacher is purposefully to form a health culture in students, which, in turn, depends on the formation of their competencies, which is why innovative technologies for artistic and creative musical education of children are proposed.

Within the structure of competences that students acquire in music lessons, cultural competence along with artistic and creative competence is particularly important. The analysis of the ideas and principles of competence and cultural approaches, as well as the method of deduction, allowed us to define the concept of 'student's cultural competence' and its important component - 'artistic and creative competence'. A student's cultural competence is considered a personal formation based on a value-based attitude to world and national culture and includes general cultural and human knowledge and skills and the ability to apply them in the process of studying in a general secondary education institution and in life. Cultural competence also includes knowledge, skills and abilities of a student to use the potential of musical art, traditional and innovative means of world musical culture to harmonise their inner state after experiencing stressful situations.

Correspondingly, the artistic and creative competence is a personal formation comprising two components: artistic and creative ones. The artistic component encompasses the student's capacity to independently address problems pertaining to artistic perception, the interpretation of diverse works of art, and the acquisition of knowledge and skills in various artistic activities. The creative component, in contrast, necessitates the development of a unique ability to solve problems in innovative and unconventional ways, particularly in music teaching, where the ability to

improvise and create is of paramount importance. The capacity to address both typical and unconventional musical pedagogical challenges in novel and unconventional ways, particularly through improvisation and the creation of music (Ovcharenko-Pieshkova, 2024). Moreover, it is recommended that students be provided with opportunities to develop their artistic and creative abilities through the incorporation of artistic and creative music education technologies in both the classroom and extracurricular settings. These approaches are designed to facilitate the acquisition of knowledge and skills related to health-maintenance through the use of artistic and creative music activities. The development of students' artistic and creative competence is based on their active involvement in various types of musical creativity. This involves the disclosure and development of their natural abilities, artistic and creative skills. The development of students' artistic and creative competence is based on their active participation in various forms of musical creativity. This involves the discovery and cultivation of natural abilities, artistic and creative expression of personality, which contributes to the formation of children's motivation towards musical creativity and reduces the risk of depression or mental disorders.

The relationship between students' health culture and their cultural, artistic, and creative competences is evident in the structure of the phenomenon being studied. The application of the systematisation method allowed us to identify the structure of the student's health culture, which includes the following components: motivational and cultural, cognitive and knowledge, creative and technological, and reflexive and health-preserving components. Apparently, the formation of the components in the structure of students' health culture largely depends on the use of modern innovative technologies of artistic and creative music education in the educational process in general secondary education institutions, which have a significant motivating, cognitive, harmonising intellectual and emotional potential.

In defining the essence of the concept of 'technology', we were guided by the ideas and principles of the technological approach, the term itself is considered in the scientific literature as the combination of the Greek words *techne*, meaning art or skill, and *logos*, meaning word, knowledge, or science. Technology involves the algorithm and automation of human actions to master specific knowledge and skills in a particular field or industry. In the context of general secondary education institutions, a range of music teaching technologies with a health-promoting focus are employed. These include innovative computer technologies with musical art tools (Johnston et al., 2018), interdisciplinary music technologies combined with music psychology and neuroscience (Agres et al., 2021); developmental and

corrective technology of music education for children (Sysoieva et al., 2020), pedagogical technology of inclusive music education (Ovcharenko et al., 2021), etc.

The study explores the use of artistic and creative music education as a means of promoting the health and well-being of Ukrainian students. Music lessons are particularly important for students who require special educational conditions to restore their psychological health, cultivate the health culture and learn how to preserve it. Applying classification method, the study examines and tests various technologies, including musical plasticity development and artistic-breathing training, musical improvisation and creation, as well as artistic and creative transformation. **Table 1** demonstrates the positive impact of these technologies on students' health.

Table 1. Technologies of students` artistic and creative music education at music lessons

Name of the technology	The essence of the technology	The purpose and result of technology implementation
Musical plasticity developing technology, artistic-breathing trainings	The essence of the technology is to develop and use special motor and breathing exercises that incorporate musical perception and creative imagination, enhancing the students` artistic imagery when performing musical pieces.	Obtaining a sense of satisfaction, positive emotions; development of emotional and motor freedom, activity, body plasticity of students, the need for physical and emotional health.
Technology for teaching musical improvisation and music creation	Technology is a means of teaching students elementary composition and vocal along with instrumental improvisation. During the training, the student should form an artistic image and give it certain characteristic musical features. The implementation of the technology involves students playing the roles of "Improviser-singer" and "Composer-singer", in which students collectively create a melody, come up with a lyric to it and sing together, create elementary phonograms to accompany the song using music computer programs.	Creating a situation of success and a positive outcome; harmonization of intellectual and emotional spheres; development of children's creative abilities during composing and improvisation activities; activation of students' motivation (inquiry, need, interest) to engage in musical creativity.

Technology of musical and artistic transformation	The technology includes the use of didactic games such as: "instrumentalist-actor", "conductor-actor", "singer-actor", which evoke mimicry and emotional reactions, students` figurative gestures to the artistic image of a musical piece, develop artistic abilities, children's reaction to the rhythm and melody of a musical piece.	Activation of interest in musical art, acting to music, a sense of inner and body freedom; development of musical perception, artistic and creative abilities; orientation to a positive worldview.
Technology of artistic and creative reflection and relaxation	The essence of the technology is to master the method of artistic and creative reflection and relaxation, to find effective ways, through involvement in musical creativity, to reduce tension, to set up positive thinking, to harmonize and optimize their inner world. Students should know what type of musical activity (listening to music, playing an instrument, solo singing, singing with a group, etc.) is most enjoyable, rewarding and helps them relax and improve their mood. The technology helps to develop the ability to concentrate on artistic and creative activities.	Formation of motivation for musical creativity, mastering artistic and creative reflection, the ability to reduce the level of emotional and bodily stress, and concentrate on positive thinking.

Correspondingly, each of the technologies includes ascertainment, formative and control and evaluation stages of application. At the ascertainment stage the necessary contents, forms, methods and means of innovative music teaching are selected to meet the educational needs of the students; at the formative stage the educational material is introduced into the music lessons; at the control and evaluation stage the results of the formation of the health culture of the students, the knowledge and ability to engage in artistic musical creativity, either independently or in collaboration with classmates are assessed, and the positive and negative aspects of the technology are determined. The main form for the implementation of these technologies is the music lesson, the function of which, in addition to the introduction of students to world music and the formation of musical culture, is to harmonise the spiritual and physical, emotional and intellectual in the students` personality, to acquire knowledge and skills so as to use artistic

musical creativity for health promotion and, accordingly, to form their health culture in the process of learning music.

In order to determine the effectiveness of formation of students' health culture by means of artistic and creative technologies, a pedagogical study was carried out in 2022-2023 in Ukraine, which included: the research stage - the beginning of 2022 and the formative and control and evaluation stages of the experiment - the academic year 2022-2023 on the basis of Kryvyi Rih Gymnasium №96of Kryvyi Rih City Council and Kyiv Innovation Lyceum "I -School". The evaluation of the current level of formation of students` health culture was grounded on the selection of already developed as well as elaboration of new author's methods of diagnosing the components of this phenomenon structure (such as: pedagogical observation, surveys, testing, creative tasks). The number of students who took part in the ascertaining stage of the study was 48 students of the third grade (9-10 years old), namely: 22 students of the experimental group (EG - students from Kyiv Innovative Lyceum), whose health culture was formed using innovative technologies of artistic and creative music education, and 26 students of the control group (CG - students of Kryvyi Rih Gymnasium №96), who studied according to the current program of general secondary education. The study was conducted using modelling and generalisation methods, with the help of which four groups of criteria were identified and substantiated in accordance with the components of the structure of students` health culture: motivational and cultural, content and knowledge, creative and active, health-preserving and self-improving criteria, as shown in **Table 2**.

Table 2. Correspondence of students' health culture structure components with criteria and their indicators of this phenomenon formation

Components	Criteria	Indicators
motivational and cultural component	motivational and cultural	- the degree of awareness of health culture value; - the level of formation of students' health-consciousness; - the degree of ability to self-actualization in mastering the values of health protection in the process of artistic and creative musical activity.
cognitive and knowledgeable component	content and knowledge	- the degree of need and emotional and volitional orientation to learning the technologies of artistic and creative music education; - level of knowledge about health culture and technologies of artistic and creative music education; - is a measure of the formed ability to harmonize the intellectual and emotional spheres in the process of mastering the technologies of artistic and creative music education.
creative and technological component	creative and active	- the level of interest in mastering artistic and creative activities for health promotion; - the level of formation of skills to effectively apply artistic and creative technologies of music education; - is a measure of the ability to engage in artistic and creative activity.
reflexive and health-preserving component	health-preserving and self-improving	- the level of need for reflexive health-preserving activities; - the level of the formed ability to self-improve in health care based on artistic and creative reflection; - the degree of creative activity and positive attitude to self-improvement in mastering the health culture.

In the course of the study, the three levels of students' health culture formation in the process of artistic and creative music education were determined: passive-reproductive, active-reproductive, and creative-productive.

In order to assess the level of formation of the motivational and cultural component of students' health culture through innovative techniques of artistic and creative music education, applying a survey method, a questionnaire «Need for Health», consisting of nine questions was developed and enabled us to reveal the respondents' motives: Is health the most important value for a person? Do you understand the significance of health culture? Do you know what you need to do to maintain good health? Do creative activities such as drawing, music, and literature improve your mood? Do you know how to cope with troubles and a bad mood? Do you enjoy engaging in creative activities? Would you like to explore musical creativity in depth? Do you appreciate the musical art of your own and other countries? Would you be interested in learning about the musical culture of other countries? Do you have a desire for musical creativity? The use of the method of analysing respondents' answers showed that more than half of the students showed passive-reproductive and active-reproductive levels of motivation to independently use the means of artistic and creative music education in the formation of their own health culture. And only a small percentage of EG and CG students (11.55%) showed a significant interest in learning independence in the formation of the phenomenon by means of innovative artistic and creative technologies and showed a creative and productive level.

Aiming at estimating the cognitive and knowledge component of students' health culture, with the application of method of testing, the tests «Value of Health Knowledge» were developed to answer the questions on the impact of musical creativity on physical and psychological well-being, the harmonisation of mental and emotional processes, the significance of singing and breathing techniques, the role of physical exercise, dance, and plasticity in music, the fundamentals of music creation and improvisation, as well as verbal and non-verbal expressions during music performance. The tests also assess the potential for self-improvement in their knowledge on the matter. The test results revealed that the two largest groups consisted of EG and CG students with passive-reproductive and active-reproductive levels of formation of the cognitive and knowledge component of students' health culture (on average 90%), and with creative-productive levels - on average 10% of respondents.

To appraise the level of development of students' health culture in terms of the creative and technological component, the method of creative tasks was employed. These tasks are aimed to demonstrate the degree of proficiency in applying creative activities to enhance emotional and physical well-being. The tasks included: 1. Do breathing and articulation exercises,

singing, playing musical instruments such as the flute and harmonica; 2. Perform musical and graceful movements to music; 3. Compose a short song or complete a melody played by the teacher; 4. Act out a character role from a musical piece using facial expressions, gestures, and pantomime. The analysis of the results of creative tasks showed slightly lower results of EG and CG respondents: passive-reproductive and active-reproductive levels of formation of the creative and technological component of health culture were revealed by 91.67% of students, creative-productive - by 8.33%.

In order to find out the level of formation of the reflexive and health-preserving component of the students' health culture in the process of artistic and creative music education, a questionnaire «My health – my care» was developed based on the children's ability to self-evaluate and self-analyze their attitude to health, which includes eight questions, namely: Do you improve your mood by drawing, music, literature and other creative activities? Do I think that health is important for a person? Does music help me to follow the basic rules of health? Do I do drawing, music, literature and other creative activities when I have difficulties? Do I believe that artistic musical creativity makes me feel happy, secure, calm and well? Does artistic and creative music education help me to maintain a good mood, to become smarter and more creative? Does artistic creativity during music education help me to improve my health? Do I practice music at home? How long and how often? The analysis of the respondents' survey revealed that only 10.21% of respondents had a creative and productive level of formation of the reflexive health-preservation component, 89.79% had passive and active reproductive levels of this phenomenon formation.

Overall, the results of the ascertaining stage of the study showed that almost half of the respondents - 45.45% of EG and 46.15% of CG - had a passive-reproductive level of students' health culture formation in the process of artistic and creative music education; 45.45% of EG and 42.3% of CG - had an active-reproductive level; 9.1% of EG and 11.55% of CG - had a creative-reproductive level. Thus, the above diagnostic methods at the ascertaining stage of the experiment made it possible to find out that the levels of health culture formation of students in the experimental and control groups were almost the same.

At the formative stage of the experiment, the students of the experimental group studied music using the proposed technologies, while the students of the control group mastered the educational material according to the conventional program. In order to create a health culture of the studied group by means of innovative technologies of artistic and creative education of students, the following methods were used: pedagogical

observation, conversations, trainings, surveys, creative tasks, didactic game "Music is my friend". In its turn, to create a health culture of the studied group by means of innovative technologies of artistic and creative music education, the following pedagogical conditions were introduced 1) creation of health-preserving educational environment in classroom and extracurricular forms of education - health-preserving space can be considered as a set of the most individually organized factors for maintenance and promotion of health (Maksymchuk et al., 2020); 2) active use of the technology of using musical artistic activity and artistic-breathing trainings, technology of teaching musical improvisation and music creation, technology of musical-artistic transformation, technology of artistic-creative reflection in the educational process at music lessons and extracurricular activities (Table 1) (Youm et al., 2024); 3) application of effective methods of artistic-creative teaching of health-promoting orientation, namely: conversations, creative tasks, surveys for acquisition of knowledge, skills, abilities of students to use the means of artistic-musical creativity for maintaining a healthy lifestyle, solving psychophysiological health problems (Larson, 1995).

The application of the reflexive survey method and the use of didactic games: "Instrumentalist-actor", "Conductor-actor", "Singer-actor", "Music - health" were of great importance in forming the value of children's health (Sysoieva et al., 2020). During the survey, students were asked the following questions: what is health and a healthy lifestyle; what type of musical activity (listening to music, playing an instrument, singing solo, singing with a group, etc.) is the most pleasant, successful and promotes relaxation and mood improvement for them; how they will overcome a bad mood, fear, stress, etc.; does engaging in artistic and creative musical activities affect their feelings and life in general; whether artistic and creative musical activity affects a healthy lifestyle; do they want to learn more about how artistic creativity affects human health, etc. The essence of the didactic games "Instrumentalist-actor", "Conductor-actor", "Singer-actor" consisted in the formation of the ability to artistically and creatively reflect the artistic imagery of musical works by means of various types of musical art, which motivated creativity, reflected the level of knowledge of students, caused a positive setting (Sysoieva et al., 2020). The didactic game "Music - health" involved students choosing a piece of music that evokes the specified emotion. Children were given cards with the name of the works, they called the emotion, they had to pick up the card with the correct name of the work and prove their opinion. The winner was the one who had the most of correct answers. The application of the author's innovative technologies of artistic and creative musical education, which included the author's methods, contributed to the formation of the knowledge, skills, and

values of students necessary for the formation of a complex phenomenon - their health culture The use of the method of pedagogical observation made it possible to investigate how the mood of students changed during participation in didactic games 'instrumentalist-actor', 'conductor-actor', 'singer-actor', performing creative tasks in class and in extracurricular activities in the process of applying the proposed artistic and creative technologies of music education. The children were distracted from the anxious state in which they often came to school and enjoyed the opportunity to participate in musical-plastic and artistic-breathing trainings together, to create a piece of music using various sound instruments and singing, to artistically convey the artistic image of a certain piece of music, and so on.

At the end of the formative study stage, through pedagogical observation, we observed significant changes in the general psycho-emotional mood of the school children, their motivation for music lessons, their attitude towards artistic and creative music learning and, of course, a more attentive and conscious attitude towards their health.

The diagnostic methods used during the study's ascertaining stage were applied to the students in the experimental group. The results were then compared to those of the control group, based on the formative experiment. The study revealed that 4.54% of the experimental group and 42.3% of the control group had a passive-reproductive level of health culture formation during artistic and creative music education. Additionally, 54.54% of the experimental group and 42.3% of the control group had an active-reproductive level, while 40.92% of the experimental group and 15.4% of the control group had a creative-reproductive level. Therefore, the study confirmed the effectiveness of the formation process.

The study aimed to determine the difference in results between the control and experimental groups during the ascertaining and formative stages. Specifically, it was found that the number of students with a passive-reproductive level of health culture formation in the process of artistic and creative music education decreased by 40.91% in the EG and by 3.85% in the CG. The percentage of students with an active-reproductive level of health culture formation in the process of artistic and creative music education increased by 9.09% in the EG, while it remained unchanged in the CG. Additionally, the number of students with a creative and reproductive level of health culture formation in the process of artistic and creative music education increased by 31.82% in the EG and by 3.85% in the CG.

The formative experiment revealed that the levels of health culture formation were almost identical between the students of the experimental and control groups. Calculations based on the results of the experiment

showed an increase in the dynamics of raising the levels of health culture for both groups. It was found that the level of health culture formation was significantly higher among students in the experimental group compared to those in the control group. **Figure 1** shows the difference in formation levels between the experimental and control groups at the beginning (ascertaining stage) and end (formative stage) of the experiment.

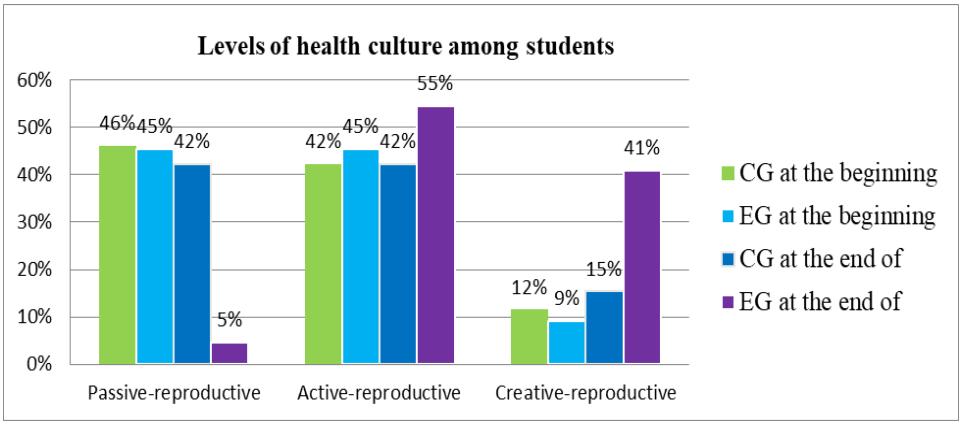

Figure 1. Comparison of the levels of health culture formation among students of EG and CG at the beginning and end of the study.

According to the homogeneity criterion of the chi-square test, the null hypothesis states that the frequency distributions in the samples do not differ, meaning that the samples will be homogeneous. The alternative (competing) hypothesis rejects the null: the frequency distributions in the samples differ significantly. After comparing the frequency distributions at the beginning of the experiment in the control and experimental groups, we concluded that the groups were homogeneous. The empirical value of the criterion, 0.10, is less than the critical value of 5.99. After comparing the frequency distributions at the end of the experiment between the control and experimental groups, it was concluded that the groups were heterogeneous. The comparison results are presented in **Table 3.**

Table 3. Results of samples comparison using chi-square homogeneity criterion

Group/Level	Passive-reproductive	Active-reproductive	Creative-reproductive	Total	Conclusion and commentary
CG at the beginning	12	11	3	26	Hypothesis Ho. There is no reason to reject the hypothesis of homogeneity of the CG and EG samples at the beginning of the experiment.
EG at the beginning	10	10	2	22	
	Empirical 0.10	Critical 5.99			
CG at the end of	11	11	4	26	Hypothesis H1. The hypothesis of homogeneity of the samples for CG and EG at the end of the experiment is rejected.
EG at the end of	1	12	9	22	
10.04	Empirical	Critical 5.99			
CG at the beginning	12	11	3	26	Hypothesis Ho. There are no grounds to reject the hypothesis of homogeneity of the samples for the CGs at the beginning and CGs at the end of the experiment.
CG at the end of	11	11	4	26	
	Empirical 0.55	Critical 5.99			
EG at the beginning	10	10	2	22	Hypothesis H1. The hypothesis about the homogeneity of the samples for the EG at the beginning and the EG at the end of the experiment is rejected.
EG at the end of	1	12	9	22	
	Empirical 12.39	***Critical 5.99***			

The criterion value of 10.04 exceeds the critical value of 5.99, indicating significant differences between the frequency distributions by level in the samples. Additionally, we compared the results of the control

and experimental groups at the beginning and end of the experiment, with an empirical value of 0.55 and 12.39, respectively.

A comparison of the dynamics of the levels of formation of students' health culture made it possible to determine the indicators of changes that were insignificant in EG and CG at the beginning of the experiment and very significant with the students of the research group who studied using innovative technologies of artistic and creative music education in contrast to the students of the control group, who were trained according to the traditional method after the completion of the experiment, which is shown in Table 4.

Table 4. Dynamics of students' health culture formation

Levels of formation	Quantitative indicators EG at the beginning of the experiment	CG	Indicator of changes	Quantitative indicators EG at the end of the experiment	CG	Indicator of changes
Passive-reproductive	0.455	0.462	- 0.007	0.045	0.423	- 0.378
Active-reproductive	0.455	0.423	0.032	0.545	0.423	0.122
Creative-reproductive	0.091	0.116	- 0.025	0.409	0.154	0.255

The study confirmed that the acquisition of artistic and creative knowledge, skills, and abilities by the students of the studied group in the context of health care promotion contributed to their awareness and acquisition of the values, knowledge, and skills of health culture. The introduction of innovative technologies of artistic and creative education influenced the increase in the level of motivation, the growth of interest and need for a healthy lifestyle, the experience of applying the algorithms of artistic and creative musical activity in various educational and life situations, the desire to acquire new knowledge and skills and self-improvement in preserving one's own health and the health of others with the use of artistic creativity in the art of music. The conducted pedagogical experiment proved that the health culture level of the students of the research group increased significantly, owing to the effective introduction of innovative technologies of artistic and creative music education into the educational process, while the level of the health culture of the students in the control group did not undergo any significant changes.

Conclusions

So, the relevance and importance of solving the problem of forming students' health culture by means of innovative technologies of artistic and creative musical education for music and music-and-pedagogical education of Ukraine and the countries of the world is proven; the concept of "students' health culture" is defined, which is a systematic, dynamic formation of the student's personality, provided by a complex of worldview values for human health and knowledge, skills and abilities aimed at hygiene and health care of one's own as well as others in both curricular and extracurricular educational activities. Furthermore, the structure of the students' health culture was revealed as the composition of the following components: motivational-cultural, cognitive-knowledgeable, creative-technological, reflexive-health-preserving. The positive influence of musical art and artistic creativity is reflected not only on the health of students, but also on the formation of values, knowledge, and health-preservation skills in them. The structure of artistic and creative competence is determined, which includes four components: motivational and cultural, cognitive and knowledgeable, creative and technological, and reflexive and health-preserving components. The technologies of artistic and creative musical education have been developed and classified, which are considered as an effective means of forming the students' health culture in music lessons - the technology of using music-artistic activity and artistic-breathing trainings, the technology of teaching musical improvisation and creating music, the technology of musical-artistic transformation, technology of artistic and creative reflection, all of which having an impact on the formation of children's health culture.

Thus, in order to check the effectiveness of the formation of students' health culture by means of innovative technologies of artistic and creative musical education, we conducted a pedagogical experiment in 2022-2023, which included ascertaining, formative and control-resultative stages. The number of students who participated in the study was 48 in total, of them: 22 students of the experimental (research) group, in which the level of health culture of the group increased with the use of innovative technologies of artistic and creative musical education, and 26 students of the control group, who studied according to the current program for institutions of general secondary education. To enhance the efficacy of formation of students' health culture, the corresponding pedagogical conditions were introduced into the educational process, namely: provision of a health-preserving educational environment in the classroom and extracurricular forms of education; an active use of the technology of using music-artistic activity and artistic-breathing trainings, the technology of teaching musical

improvisation and creating music, the technology of musical-artistic transformation, the technology of artistic-creative reflection in the educational process in music lessons and extracurricular activities; application of effective methods of artistic and creative education of health care promotion; algorithms of artistic and creative musical activity to solve various health problems in various life situations (stress, negative emotions, psycho-emotional disorder, lack of communication skills, depressive state, etc.). At the experimental stage, the following research methods were applied: the questionnaire "Need for Health" in order to determine the level of formation of the motivational and cultural component in the context of students' health culture; the "Value of Health Knowledge" test to identify the level of formation of the cognitive-knowledgeable component; creative tasks in order to determine the level of formation of the creative and technological component; the questionnaire "My health – my care" in order to find out the level of formation of the reflexive health-preserving component; pedagogical observation, conversation, training, survey, creative tasks, didactic games "Instrumentalist-actor", "Conductor-actor", "Singer-actor", "Music - health" for the formation of students' health culture by means of innovative technologies of artistic and creative musical education. Consequently, four groups of criteria have been substantiated in accordance with the components of the structure of students' health culture: motivational and cultural, content and knowledge, creative and active, health-preserving and self-improving ones. The implemented author's methods of forming students' health culture by means of innovative technologies of artistic and creative musical education with the students of the research group led to an increase of motivation and the acquisition of values of preserving their own health and those around them, deepening knowledge, skills, abilities to creatively apply artistic means of musical art, algorithms of application experience of artistic creativity to overcome the effects of stress, negative emotional moods, depressive states, etc. The conducted pedagogical experiment confirmed that the level of health culture formation of the students of the research group increased significantly in contrast to the control group students, where the level of health culture formation practically remained the same. The probability of the results of the experiment was tested and proven using the method of mathematical statistics - the chi-square homogeneity criterion. Taking into account the pivotal role of the study in students' psychological health care promotion, our further research will be related to the study of the influence of digital technologies on the development of students' intellectual and psycho-emotional sphere through the means of musical art.

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