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Non-linear thinking strategies in post-non-classical higher art education: A synergistic concept

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Abstract

Relevance. The relevance of the subject is conditioned upon the concept of “non-linearity” as a conceptual idea of the philosophy of education, which implies a new way of thinking in the context of the modern transitive, non-linear transformation of Ukrainian society.

Purpose. The purpose of the research is to understand the significance of non-linear thinking strategies in the modern educational context and to make a valuable contribution to the development of science and art.

Methodology. To achieve the purposes and implement the conceptual ideas, several research and search methods were chosen: conceptual and terminological analysis, comparative analysis, synthesis, generalisation of scientific perspectives, and extrapolation of theoretical and methodological provisions. The research methods in the research are based on the concepts of nonlinear dynamics and synergetics as interdisciplinary scientific knowledge.

Results. The main results of the research are the identification of opportunities for implementing nonlinear thinking strategies in the context of higher art education. The necessity of expanding the forms and methods of art education and their connection with modern production and spheres of public life was substantiated. The research demonstrates that the mechanism for implementing these strategies in the content of higher art education is: the foundation of knowledge, overcoming its dispersion and fragmentation, the introduction of interdisciplinary scientific integration of knowledge, the diversification of forms and methods of art education and their relationship with production, and the connection with the main spheres of public life (dual forms of education, the production of new knowledge through various educational methods of a projective and research nature).

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Conclusions. The practical significance of the research is that the introduction of non-linear strategies in higher art education contributes to the deep development of art students, helps them adapt to constant changes in the modern world, and promotes the establishment of creative and innovative solutions in the artistic field.

Keywords: interdisciplinarity; self-organisation; creativity and innovation; art professionals; “emergence”.

Introduction

The relevance of this research subject is conditioned upon the need to change the types of thinking and behavioural styles in the system of higher art education, which is associated with the emergence of alternative non-linear thinking in the second half of the 20th century, which is commonly called post-non-classical. It has become consonant with modern information technologies, new electronic forms of communication and works with texts, in particular, intertextuality, and discourse in the global information network, establishing the foundation for the development of postnonclassical (synergistic) non-linear education.

The attention to this issue is conditioned upon paradigmatic shifts in the educational sphere, which allows considering complex, multidimensional and non-equilibrium systems, including higher art education. The specificity of postmodern studies is manifested in the observation of scientists over the specifics of the world and culture, the interpretation of human life, the problems of world understanding, and the specific conditions of individual change. The postclassical worldview is a rich, heterogeneous spiritual mosaic largely unexplored in the way people collect information and describe it. Notably, these images are significant today as a cultural form in natural history, philosophy, cultural studies, anthropology, and sociology, demonstrating a shift towards post-nonclassical types of scientific rationality and paradigms. M. Savchyn argues that the role of humanities research is beginning to manifest itself in a cultural context [1].

As noted by I. Predborska, the term “complexity” was first used to describe and characterise systems with many elements and consistent parameters of self-development [2]. As noted by N.V. Kochubey and M.O. Nesterova note that through knowledge, people must learn to observe the situation, globalise it, and consider multidimensionality, i.e. complexity, to awaken social, private, and anthropological transformations [3]. It confirms the need to change the way of thinking through modern education, the cognitive foundation of situational complexity, which is manifested in the need to perceive the context, the multidimensional, the complex, to understand the relationship between the entirety and its parts. The research by O.P. Shcholokova highlights the significance of music teacher colocalisation in the future, in which music education is seen as a field of new knowledge production through various teaching methods, with a projective and research character [4]. It requires a transition from the traditional pedagogical paradigm of informational broadcasting to the pedagogy of individual creative understanding. In this regard, researchers emphasise the need to develop creative thinking, which helps to overcome gaps and fragmentation of knowledge, facilitates organisation, and develops the ability to use their knowledge to solve problematic musical and pedagogical

situations. Therewith, attention is focused on the importance of guiding educational synergy aesthetically.

Humanistic models of personality development are based on a post-classical worldview in which events are not limited to cause-and-effect relationships and can be considered in terms of semantic, synchronous, energetic and structural connections. Thus, an important area of research in personality development should be based on knowledge of regularity, universality, universality and repeatability, and knowledge of randomness, separateness, uniqueness and individuality. O.M. Oleksiuk interprets transformation processes as open and self-organised, and they should be given the status of fundamental factors of personality development [5]. It means refusing to impose cause-and-effect relationships, considering randomness as an external obstacle to the research process that should be ignored.

In the context of the current transitional, non-linear transformation of Ukrainian society, the successful solution to urgent problems of educational and cultural development largely depends on the professionalism of music teachers, who both convey theoretical concepts of new educational paradigms and contribute to the development of music teachers. These transformations lead to an in-depth analysis and disclosure of the content of this area of research. The problem of its research lies in the theoretical and methodological substantiation of the phenomenon of nonlinearity and the outlining of mechanisms for implementing nonlinear thinking strategies in the context of higher art education, which both meet the needs of the present and prove to be very promising for future generations. The purpose is to disclose and substantiate the phenomenon of nonlinearity in the context of higher art education. The research is designed to identify and analyse the mechanisms for implementing non-linear thinking strategies that meet the requirements of the present and have the potential for future development.

Materials and Methods

In the search for theoretical and methodological guidance, the authors relied on nonlinear dynamics and synergy as conceptual provisions of interdisciplinary scientific knowledge: the theory of self-organisation, open dissipative systems, the study of nonlinear, unbalanced, unstable phenomena, complexity, the development of “order out of chaos”; the theory of complex (complex) thinking; the theory of coherent interaction between postmodern thought and postnonclassical science; the extrapolation of synergistic and nonlinear thought to cultural, artistic and creative, art history theory of property problems. To achieve this purpose, various research methods were used, including comparative analysis, theoretical modelling, synthesis and system analysis. The following methods were used in this research:

Comparative analysis: was used to compare different approaches, methods and practices used in the context of higher art education in order to identify the advantages and prospects of non-linear thinking strategies. Instructional methods with innovative approaches that consider synergistic and non-linear aspects were considered.

Theoretical modelling: theoretical modelling includes the development of a model that reflects the connections and interactions of non-linear thinking strategies in the context of higher art education. A theoretical model was developed that reflects the connections and interactions of non-linear thinking strategies in the context of higher art education. Non-linear thinking strategies include aspects such as creativity, intuition, experimentation and unconventional problem-solving. Although there may not be a specific theoretical model that combines synergies and non-linear thinking strategies in the context of higher music education, there are studies that demonstrate innovative approaches to music teaching that consider synergistic and non-linear aspects.

Synthesis: This method was used to develop a theoretical model and summarise the research findings. Through the analysis of the data obtained, conceptual approaches and frameworks were developed to substantiate non-linear thinking strategies in higher art education. Key concepts and frameworks used to substantiate non-linear thinking strategies in higher art education: the study and application of non-linear thinking strategies promoted creativity and innovation in the artistic process. The theoretical model of the implementation of synergy and non-linear thinking strategies in higher music education offered an innovative approach to the training and development of students in the field of music.

System analysis: It was used to consider higher education in the arts as a complex system and to identify the relationships and interactions of non-linear thinking strategies in this system. It allowed for a deeper understanding of the role and significance of non-linear thinking strategies in the creative process of art students, helped to stimulate students' creative thinking, and increased their ability to look at problems and situations from different perspectives and find original solutions. Synergy and non-linearity allowed students to merge different ideas, approaches and techniques, establishing new, unexpected innovations and concepts in art. It helped them to conduct their creative search and establish unique works. Conceptual approaches and a theoretical model were developed, which became the foundation for further research and implementation of innovative approaches in the curricula of higher art education institutions. The implementation of these ideas contributed to the enrichment and strengthening of the artistic sphere, the development of student's creative talents and the promotion of art to a new level.

Results

In the contemporary scientific discourse, one can find some interdisciplinary studies that focus on aspects of the interaction between the musical arts (performance, music pedagogy) and some dominant areas of social life to update the content and expand the boundaries of the musical arts, educational programmes related to the professional training of art professionals. Therefore, it is necessary to

consider the mechanisms for implementing strategies of non-linear thinking in the content of higher art education, which are explained in a new way in the concepts of world and Ukrainian scholars. Theoretical studies of non-linear phenomena, as a conceptual idea of modern educational philosophy, provide people with a new way of thinking to understand the new information flow in modern non-linear and complex organisational educational spaces and become an important methodological foundation for these studies. Practice-oriented theory focuses on the aspects of interaction between musical art (performance, music pedagogy) and many major spheres of social life; concepts of introducing a synergistic approach to the conceptual field of music pedagogy research in music education in the educational process using linear teaching methods.

Non-linear thinking strategies – an approach to solving problems and achieving purposes that go beyond conventional straightforward thinking. They are based on using non-conventional methods and tools that promote creativity, out-of-the-box thinking and pushing the boundaries of what is possible. Non-linear thinking strategies may include approaches such as associative thinking, mental modelling, intuitive understanding, flexibility in decision-making and rejection of traditional patterns. Synergetics is a branch of science that studies the interaction of complex systems and self-organising phenomena in nature and society. In the context of art education, the synergistic approach means using the principles of self-organisation, interaction and mutual reinforcement to create new, unexpected solutions and creative conclusions. It involves using an interdisciplinary approach and interaction of different fields of knowledge and expertise to achieve purposes.

In post-non-classical higher art education, non-linear thinking strategies and the synergistic concept can be used to promote the development of creative abilities, find new ways of expression, implement projects, and develop critical thinking and self-expression in art students. The conceptual idea of intelligence is to postulate synergistic concepts as a methodological platform for implementing strategies of non-linear thinking in the context of higher education, as innovative resources for solving a wide range of problems, in particular, to develop the professional essence of specialists in the field of contemporary art (worldview, research, production, art and creativity, music teaching, music performing arts). The French scientist Jean-François Lyotard was one of the first Western scholars to recognise the connection between postmodern thought and postnonclassical science. Lyotard believes that postnonclassical science is an open system, which is related to the open society and open culture of postmodernism, and is the opposite model of a stable system. Lyotard connects post-classical science with its attributes of nonlinearity, uncertainty, metaphysical crisis, and universalism with philosophical postmodernism and its suspicion of metanarratives. Ultimately, the development of science has led to the emergence of a series of “locally relevant language games” as schools of discourse, and, thus, radical pluralism is characteristic of contemporary philosophy, as postmodernism is a project for the future [6].

As noted by the contemporary American-Canadian scholar and cultural critic Henry A. Giroux, the value of

postmodernism lies in its simultaneous depiction of the unstable cultural and structural social relations that increasingly characterise the developed West, these relations have led to “productive instability” in Western developed countries, capable of establishing order out of chaos [7]. The above outlines a field of study of the issue, which demonstrates the possibility of extrapolating synergistic ideas (nonlinear, unstable, chaotic) to the field of education to demonstrate its methodological potential for understanding cognitive processes. In the context of the stated subject, this area of research has proved to be very fruitful and promising. In addition, it is confirmed by the fact that the content of higher art education increasingly reflects the strategy of non-linear thinking due to the collaborative orientation of art education. These shifts occur as a result of various nonlinear factors: the introduction of a synergistic approach to the conceptual field of music education research; using open, nonlinear teaching methods, such as between the subject and the object of knowledge, between subjects or a nonlinear dialogue between these forms of synergy; implementation of various forms of post-classical practice.

Arts education is considered an effective model for training performing musicians and future music teachers interested in maintaining physical and mental health at the proper level through engaging in the necessary physical activity [8]. The authors of the above research fully agree with this issue, as it is extremely relevant for Ukraine and is related to Russia’s military operations against Ukraine. The psychological and physical impact of aggressive military operations on the Ukrainian population requires separate research. The research traces the interdisciplinary links between music (performance and pedagogy) and medicine and psychology and confirms the significance of introducing non-linear connections into the content of higher art education.

Global civilisational challenges (epidemics, wars) make special adjustments to the systems of higher and art education. Most researchers consider various forms of art education using modern information and communication technologies (ICT). For example, the Portuguese researcher S. Milhano explores the possibility of in-service training of primary school teachers through the use of ICT in music education [9]. The research examines the effectiveness of the dual education system, which is particularly popular in Ukraine. This is stated in the Order of the Cabinet of Ministers of Ukraine No. 660-p “On the approval of the Concept of training specialists using a dual form of education” [10], which expanded the scope of dual education. The advantage of dual education is that it differs significantly from “practical courses”, as it is a way of acquiring the necessary knowledge and skills. The introduction of this form of education in the system of higher art education will contribute to the development of professional specialists who both possess basic theoretical knowledge in the field of music and can successfully develop their performance and pedagogical potential, considering the needs of the labour market. It confirms the effectiveness of implementing non-linear thinking strategies in the context of higher art education.

Notably, such issues as the development of a person’s creative potential in the field of music, their professional growth (performing and pedagogical), and the ability to self-development and self-regulation are being considered in a new way. It is conditioned upon the search for problematic situations and the independent choice of solutions: both for teaching music and music performance and as an internal source for self-development. The authors support the opinion of S. Milhano that a musician overcomes stereotypes and traditions and “breaks through” to a new territory due to the impulse of proper organisation caused by their own choice of solving problematic music performance situations [9]. The process of establishing new structures goes through a phase of primary chaos, where primary chaos plays a constructive role. The intervention of all kinds of knowledge, ideas, associations, confusion and redundant versions, the maximum expansion of non-linear musical thinking helps to reorganise previous information and establish new forms. These rules play an important role in developing future performance concepts and choosing the right way to go in musical compositions. The ideal concept is only a prototype of the future whole, not a specific form of guidance that arises in the mind of a musician. Comprehensive knowledge of the desired image of a piece of music should be maintained at all stages of its establishment. Therefore, for a convincing interpretation of a piece of music, it is very important to have a general idea of the artistic image of the work before elaborating on the details. Only in this way can the means of musical expression and the individual parts of the work be coordinated with each other and obey the general idea.

Thinking freely and unconventionally allows students to explore new ideas, make unexpected connections and establish unique works. Educational programmes should recognise and develop the creative potential of each student. Non-linear strategies allow students to express their personality and identity more deeply through the artistic process. In modern times, change is happening at the speed of light. Non-linear thinking strategies develop students’ ability to adapt to new circumstances, respond to challenging situations, and seek unconventional ways to solve problems. Learning non-linear strategies helps students develop critical thinking and analytical skills, which are important for artistic creativity and for understanding and evaluating their ideas. The creative process in art is often associated with emotions and feelings. Learning non-linear strategies contributed to the development of emotional intelligence, helping students to better understand and express their emotions through creativity. These conceptual approaches and frameworks became the foundation for the development of a theoretical model of higher art education.

Due to the philosophical aspect of the research subject, its practical significance is difficult to see. For this purpose, a theoretical model of the implementation of synergy and non-linear thinking strategies in higher music education was established and proposed (Figure 1).

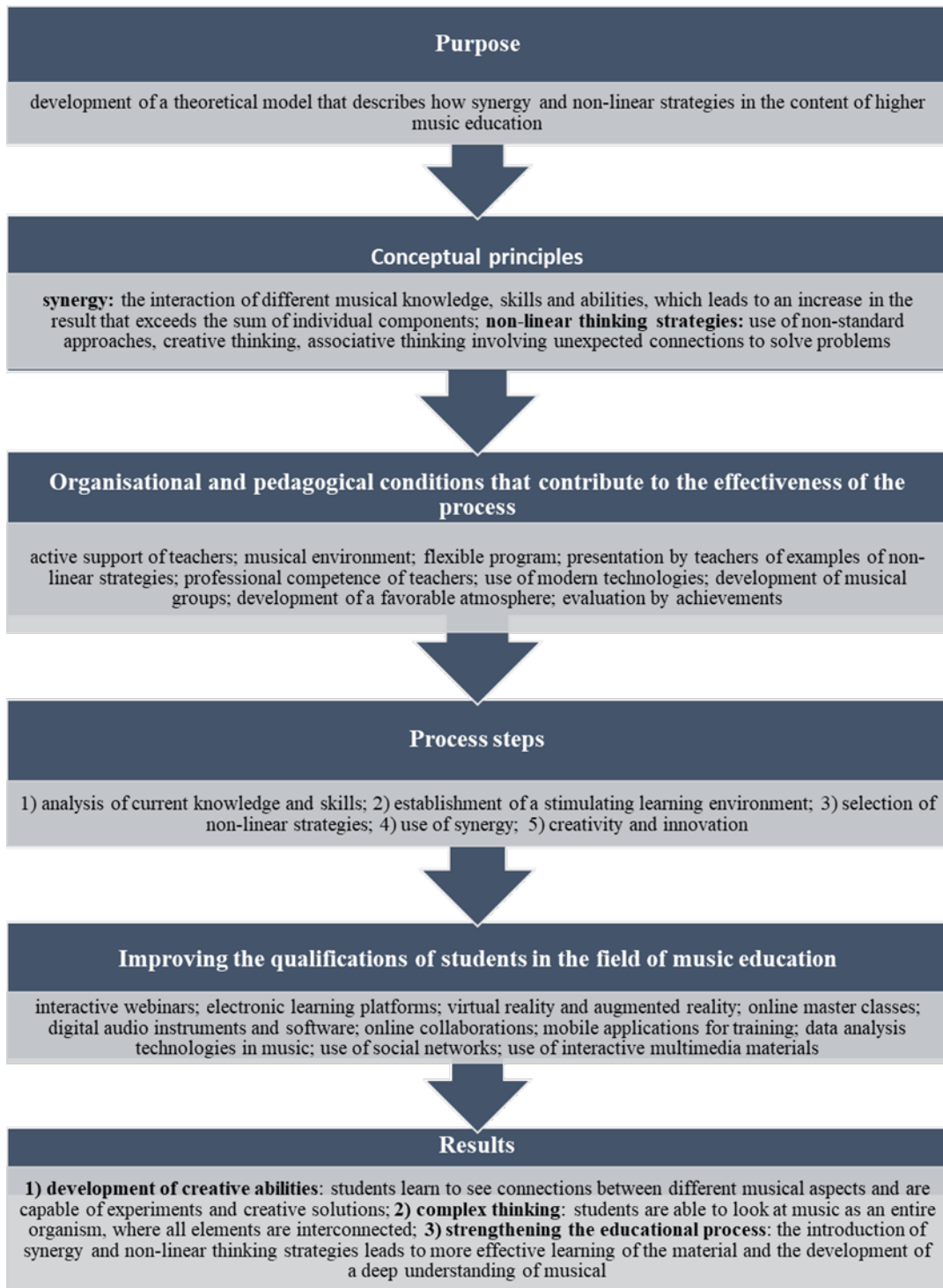


Figure 1. A theoretical model for the implementation of synergy and non-linear thinking strategies in the content of higher music education

Using synergy – the interaction of different musical knowledge and skills, and non-linear thinking strategies – non-standard and creative approaches, help to establish a favourable environment for the development of students’ creativity and complex thinking. Organisational and pedagogical conditions stimulate the acquisition of higher music education, which ensures the integration of various aspects of music training. Professional development technologies promote active and interactive learning, providing students with access to new methods of teaching and developing musical skills. In summary, the model demonstrates that the combination of synergy and non-

linear thinking strategies with organisational and pedagogical conditions and using modern technologies can improve the quality of learning in higher music education, promoting the development of creativity, critical thinking and an integrated approach to students’ musical activities. However, for the practical implementation of the model, it is necessary to conduct research and empirical tests to confirm its effectiveness and implementation in the educational process.

Disclosing the complexity and dynamics of the world around people, synergetics allows recognising the multidirectionality and probability of the complex artistic

world (drama, vision, music). In particular, the synergy of musical art is based on the postmodern understanding of the world of musical art as a “text” open to an infinite variety of interpretations and unlimited in structure, function, composition, semantic connection and meaning. Artistic and musical texts representing non-linear paradigms and based on the ideas of constant evolution and open structures are becoming a new “non-linear musical reality”, as noted by T. Mdivani [11].

Using non-linear thinking strategies in music teaching can have a significant impact on students’ learning and development. Using non-linear thinking strategies can stimulate creativity in music performance. For example, students can experiment with sounds, vary phrasing and interpretation, and add improvisational elements, allowing them to express their style and interpretation of a piece of music. Non-linear thinking strategies help to establish a favourable environment for collaborative learning. It helps to unlock their potential and develop unique musical personalities. Non-linear thinking strategies in post-non-classical higher art education, in particular, the synergistic concept, are important for the understanding and creative development of contemporary artists. Consider their significance in more detail:

1. Non-linearity: in conventional classical education, a linear approach is most often used, which implies a sequence of steps and a clear structure. However, in contemporary art and education, there is a need for non-linear strategies that allow considering the problem, attracting unexpected sources of information and transforming standard approaches.

2. Thinking strategies in post-non-classical higher art education are focused on the development of creativity, self-expression and innovation. They provide students with the opportunity to explore the world around them. For example, the synergistic approach involves using complex systemic approaches to problem-solving, considering the interaction of various factors and effects. It allows students to see the holistic picture and find unexpected connections.

3. Synergetics is a scientific discipline that studies the relationship and interaction of complex systems. In the context of post-non-classical higher art education, the synergetic concept is used to develop creative thinking, help to find new solutions and promote the artist beyond the conventional framework. It engages artists in active research of the processes occurring in artistic practice and encourages them to discover new opportunities for creative expression.

Cognitive science explores complex cognitive phenomena such as synesthesia, mental imagery, visual thinking and kinesthetic thinking, which are particularly valuable in artistic and creative activities. After all, a person usually manifests in his speech both the opinion and will of a rational personality and, in their behaviour, the irrational elements of the essence of most people, which are associated with emotions, feelings, and passions. Therefore, as a subject of social action, people are forced to consider various factors and use their personal emotional experience, intuition, premonitions, implicit knowledge when making any decision.

In the context of the issues covered in this research, the book by American journalist D. Pink “A whole new mind” is an integral part of the Information Age and is of great

interest [12]. It is about shifting the focus of the future society from logical, analytical, linear, left-hemispheric thinking to non-linear, visual, metaphorical, right-hemispheric thinking. Therewith, human cognitive abilities, such as integrity of vision, empathy, intuition, artistry, tolerance, understanding of others, and negotiation skills, through which a person brings their originality and uniqueness to the field. It becomes very crucial to take the world and build it according to their standards. Importantly, Pink’s firm belief is that today people need not just function but design, not just an argument but a story, not just a focus but a symphony (the right combination of parts into a whole), not just logic but empathy, not just a serious attitude but a game, not just accumulation but meaning and significance. The authors argue that the future belongs to people with a radically different type of thinking, capable of creativity, innovation, design, storytelling, play, reproduction, and meaning generation. Those who choose employees with such thinking and abilities will have a significant advantage in the market for goods and services. Such an approach to scientific and educational problems requires a shift in the research perspective towards the philosophy of education, which deals with the specifics of meaning and the development of meaning expressed in the mind of the researcher in a realistic form.

As mentioned earlier, nonlinear ontology and its interdisciplinary orientation – synergy – form a different picture of the world, characterised by variability, processivity, establishment of new entities. The nonlinear way of thinking provided by synergetics and its terminological tools means perceiving an ever-changing, unstable and complex world, preparing for multiple world developments and unpredictable emergencies, and, therewith, programming a new one [13-15]. Randomness and causality go hand in hand: if there is unpredictability at the bifurcation point, determinism takes effect at a more stable stage of the system’s existence; there are many, but not infinite, ways of developing a system, which is determined by its internal characteristics; the development of the system is inevitable and undergoes a series of instabilities that allow for the existence of unpredictable and uncontrollable moments. In the process of development, different trends are organically combined: on the one hand, an increase in diversity (divergence), on the other hand, a decrease and selectivity (convergence) [16; 17].

The artistic interpretation of postmodern realities is embodied in the new concept of postnonclassical music, which is associated with the postmodern (postclassical) state of the world and the ideas of composers based on the principle of objective pluralism and “open” format. Models of non-linear music systems include such genre forms as events, instrumental drama, performance, collage and intertextual techniques. The non-linear characteristics of musical art, according to the scientist, are: the randomness of the process, variability and interpretability of the text and means of expression. The non-classical aspect, according to the researchers, is a new interpretation of synthesis associated with a non-trivial fusion of art forms – music and language, music and quasi-dramas, music and vision, musical sound and technical factors. The above position allows analysing art as an open self-organised

system, where conventional linear thinking is overcome in favour of multifactorial non-linear thinking since the organisation of art is based on the same principles of natural self-organisation. artistic language. Understanding the general trends in the development of complex systems allows for more objective forecasting of results. In general, the authors agree with the analysis of the above-mentioned scholars on the issues raised and believe that strategies of non-linear thinking in the context of higher education are innovative resources for solving several professional problems: worldview values, creative production, music pedagogy, music performance.

Consider conventional instructional methods and innovative approaches. They can differ significantly in their nature and results. Conventional methods are frequently based on sequential learning, where material is presented in a structured, sequential manner [18]. Typically, teachers or instructors act as an authority figure who transmits knowledge to students. These methods may focus on the transfer of knowledge from one source to another, without considering the possibility of interaction and collaboration between learners. Innovative approaches that consider synergistic and non-linear aspects support interaction and collaboration among learners, and between teacher and learners, establishing a favourable environment for collaborative learning and the exchange of ideas [19-21]. Instead of simply presenting material sequentially, innovative approaches can take a flexible approach to learning where learners can deal with the material at their own pace and with various interruptions. Innovative learning approaches strive to establish a more flexible, engaging and effective environment where learners can develop, interact and use technology in an individualised way [22; 23].

Using non-linear thinking strategies can have a significant impact on students' learning and development, particularly in the modern world where information changes rapidly and creativity and adaptability become key skills. Students who learn using conventional linear methods may be limited in their ability to solve complex problems that require an unconventional approach. Non-linear thinking strategies help to stimulate the creative process, help to identify new ideas and find unexpected solutions. Using non-linear strategies helps students explore problems from different angles, and develop critical thinking and analytical skills. Sometimes students can be too used to learning facts without analysing their context, and non-linear methods help to make them see more possible perspectives. Teaching non-linear methods of memorising information can help improve learning and retention. For example, using associative techniques, stories, or metaphors helps students connect new information with concepts they already know, which increases comprehension and memorisation. Using non-linear strategies can help students to think critically about stereotypes, assumptions and generalisations. They learn to look at situations from different perspectives, and avoid limited thinking, and help develop flexible, creative and independent individuals who can more easily cope with modern challenges and problems.

It is believed that the mechanism for implementing the above strategies in the context of higher art education is knowledge base, overcoming its dispersion and

fragmentation, introduction of interdisciplinary scientific integration of knowledge, links with the main spheres of public life (dual forms of education; use of ICT; generation of new knowledge through a variety of educational methods, both projective and research); orientation of the individual towards self-development in a non-linear form, a way of understanding value intentions; providing individual opportunities for everyone, sometimes an alternative path to success and responsible decision-making; the desire to empower music teachers for self-improvement, self-realisation in the performance process; synergy through interaction and cooperation between music teachers in various types of artistic activity [24-27].

The results of the comparative analysis demonstrate that the construction and extrapolation of the ideas of the above analysis to the field of art education allows considering and exploring it as an open, non-linear system that can change under the influence of various factors, including natural (linear) factors and random (non-linear) factors. The literature research on these issues demonstrates the accumulation of a wealth of theoretical methods and practical experience in all areas of scientific knowledge. However, insufficient research has been done to identify specific problems in the form of 3D integrated systems, which prompted the research.

Discussion

L. V. Yablonskaya notes that transformation in higher education is about finding new ways of learning. This issue should be addressed by the philosophy and pedagogy of education [28]. A special role should be played by the development of a new type of intellectual – a carrier of intellectual and cultural models. The new pedagogy should design new ways to develop free creative individuals who can morally resolve contradictions and ethical issues and determine their priorities.

The existential situation of modern humanity is very complex and multidimensional. The development of technology, globalisation, and changes in the economic, social, political and environmental aspects of life lead to unpredictable and interconnected consequences. Society and the individual interact and influence each other, establishing complex systems that require new methodologies to understand them. S. Hanaba et al. correctly argue that changes in the existential situation of humanity are increasingly indicative of their multidimensionality, unpredictability and complexity [29]. Such complex entities as society and the individual both demonstrate their multidimensionality and development potential and require a different methodology for understanding them.

G. Dlimbetova notes that education for sustainable development requires the formulation and solution of problems common to the entire world community and specific to individual countries and people [30]. T. Zemlinskaia et al. note the concept of worldview for modern education, which is a unit of the terminology of many sciences: physics, philosophy, cultural studies, linguistics, intercultural communication [31]. L. Wittgenstein points to the fact of human participation in creating a picture of the world [32]. It can be agreed with M. Dennis that in 2020 the world is changing rapidly and unexpectedly. The COVID-19 pandemic has affected the

daily lives and professional activities of millions of people in many countries and is forcing them to change their lifestyles and working methods. Since the outbreak of the epidemic, some sociologists and political scientists have argued that the post-quarantine world will never be the same, and this prediction is slowly coming true. Higher education is no exception. Higher education in the post-epidemic era is a hot subject of research nowadays, with scholars focusing on online learning pathways and opportunities, the economic impact of small and private higher education institutions, enrolment forecasts [33].

Y.O. Mielkov correctly notes that it is the human personality that becomes complex in the paradigm of higher education and the multiplicity of human cultural identities and affects both the understanding of the outside world and the strategies for the development of civilisation, including education [34]. It is necessary to agree with N.S. Olimovna that the general evolutionary principles shared by modern postclassical science imply the attitude to language as a developing unit, including in the universe [35]. The language system cannot be opposed to the rest of the world, as it is part of the world, a product of the joint evolution of biological, psychological, social and cultural systems. Disclosing the linguistic reality, it is recognised that linguistic science is part of the educational space.

B. Gizi notes that the main elements of culture obey the law of hierarchy, which is determined by the time of appearance, and the establishment of elements and functions in the cultural system, although it is impossible to establish a strict hierarchy due to the relativity of this law [36]. Based on the above, the following main elements of culture can be distinguished: culture of communication, needs, purpose setting, space-time orientation, labour, thinking, semiotic, linguistic, axiological, psychological, religious, trance, philosophical, gaming, environmental, technical, body culture, bioenergy, moral, aesthetic, artistic, political, legal, economic culture. The hierarchy of these elements is relative and may have some variations.

Considering the interdisciplinary nature of the problem, some aspects of this subject have been successfully explored by scientists from around the world in the fields of natural and human sciences. Thus, already in the 1960s and 1980s, in the culture of post-industrial society, various forms of spiritual experience almost simultaneously began to change the paradigm towards the development of non-linear, unstable and chaotic concepts. Under such conditions, in the field of natural sciences, against the background of the postnonclassical nonlinear paradigm, scientific research, such as the general scientific cooperation programme of the German scientist H. Haken, the theory of dissipation [37]. The structure of Belgian scientists I. Prigogine and I. Stengers, the theory of autopoietic evolution of self-generating, self-preserving structures [38].

The concept of intellectual culture has become an important subject in modern social sciences and humanities, particularly in philosophy, political science, cultural studies, psychology, art, pedagogy and religion. The development of modern society leads to global conflicts and crises in the areas of morality, finance, economics and society. In addition, scientists are now striving to establish new inventions and technologies that will bring new social and economic problems to humanity.

In particular, J.A. Kurbanov draws attention to the latest scientific and technological fields, such as nanotechnology, artificial intelligence, and genetic medicine [39]. Now the well-known nuclear threat to humanity is added to this. It is necessary to see where the traps are located that prevent the development of a path that could lead to an inevitable catastrophe.

The answer to the question of how scientific knowledge is changing is essential for choosing appropriate strategies for social development, as the role of science and scientific and technological activities in modern society is growing dramatically. L. Drotianko et al. note the phenomenon of interdisciplinary science, which manifests itself in the merger of technology and society, the emergence of human-machine hybrids, raises serious anthropological and socio-cultural issues, provides new challenges for professional epistemology and determines the public perception of scientific knowledge [40]. Concerning the new human qualities of science, its democracy and pluralism, the understanding of dynamic chaos as the basic hypercomplex order arising from this chaos helps to develop the idea of postnonclassical scientific and artistic creativity in connection with probabilistic systems. The modern world is a set of nonlinear processes. It requires a revision of the views on the world, science, culture, art, and education as self-developing systems in the context of the postnonclassical nonlinear paradigm.

The second, no less important area of research is related to the humanitarian sphere of scientific knowledge. Therefore, in the second half of the last century, the field of humanities and culture, which emerged in the form of postmodern philosophical trends (postmodernism, poststructuralism), proved that classical thinking cannot explain the instability and nonlinearity of the modern world. Non-linear phenomena in the humanities are disclosed through various concepts, especially rhizomes. The concept of "rhizome" is the most important concept in the philosophy of G. Deleuze and F. Guattari [41]. The most prominent quality of a rhizome is the presence of multiple outlets. F. Jameson states that, unlike a structure, a rhizome is constituted in a gap in the permanent change of its configuration and semantics and does not require coordination with the generally accepted [42].

From the previous analysis, it is clear that all socio-cultural institutions, including education, have noticed and responded to the nonlinearity of the modern world, recognising that nonlinear systems are in many cases different from linear systems, functioning more flexibly, which both improves the ability to adapt to changing conditions and improves the ability to directly influence conditions. It can be fully attributed to the social and educational phenomena of today. The research of non-linear processes in education (non-linear thinking, non-linear connections) suggests that pedagogical science should focus both on its achievements in educational science and consider the opinions of scientists from different countries, and the fields of human knowledge: philosophy, cultural studies, musicology, ethics, aesthetics, social psychology, sociology. Therewith, it is equally important to consider modern scientific achievements in interdisciplinary fields of research, i.e. cognitive science, which seeks to understand the actual life experience of a person in the natural and social world. It includes all the

specific sciences that study the human mind and the various manifestations of the human brain. These include: evolutionary biology and genetics, physiology and neurophysiology, cognitive psychology and psychoanalysis, linguistics and neurolinguistics, anthropology and comparative anthropology, computer science and robotics.

Studies in the natural sciences and humanities point to a paradigm shift in post-industrial society and the emergence of non-linear and chaotic concepts. It has an impact on the development of intellectual culture and science in general. The modern world is facing global conflicts and crises and new challenges related to science and technology, such as nanotechnology, artificial intelligence, genetic medicine and nuclear threat. The non-linearity and instability of the modern world require new approaches to science, culture, education and art. It is necessary to agree with Y. Mielkov that, from a practical standpoint, the education of critical and creative thinking is inseparable from such a strategic transformation of modern higher education as the transition to student-centred learning [43].

The research on nonlinear processes in education allows for the inclusion of perspectives from different fields and countries and using interdisciplinary approaches such as cognitive science. Understanding nonlinearity helps to improve adaptation to changing conditions and direct influence on conditions. In general, social development needs to consider the changing scientific knowledge, use interdisciplinary approaches and focus on new challenges and opportunities that nonlinearity and chaos have brought to the modern world.

Conclusions

In contemporary scientific discourse, there is an interdisciplinary approach that explores the interaction of music, especially its performance and music pedagogy, with other areas of social life. These studies are designed to update and expand the art of music, and to change educational programmes related to the training of specialists in the field of art. Non-linear thinking strategies are used to solve problems and achieve purposes that go beyond conventional straightforward thinking. These strategies include associative thinking, mental modelling, intuitive understanding, flexibility in decision-making, and the rejection of traditional patterns. Synergetics studies the interaction of complex systems and self-organising

phenomena in nature and society. In the context of art education, the synergistic approach is used to establish new creative solutions and conclusions by applying the principles of self-organisation, interaction and mutual reinforcement. Using non-linear thinking strategies, in particular, the synergistic concept, in post-non-classical higher art education helps to establish conditions for the development of innovative, creative and self-expressive abilities of students. They help artists to avoid stagnation and expand their horizons, promoting creative development in contemporary art.

Recommendations that can contribute to a better understanding and use of the phenomenon of nonlinearity in higher education in the arts: personalised learning – using nonlinear approaches to learning that consider the individual needs and abilities of students. Developing flexible curricula that allow students to choose courses and projects according to their interests and needs. Establishing opportunities for the integration of artistic disciplines and crossing borders between them. Establishing conditions for collaboration, exchange of ideas and mutual learning. Stimulating interaction between students, teachers and other arts professionals to foster creative development. Using a variety of assessment methods that consider different aspects of students' artistic development. Recognising and valuing different forms of talent and creativity that may be non-linear. Involving students in continuous self-development and self-learning contributes to the non-linear process of developing their artistic potential. Establishing a favourable environment for the development and implementation of innovative ideas and projects in art education. Supporting student initiatives and facilitating their implementation. Considering these recommendations will help higher education institutions to ensure the non-linear development and creative potential of their students in the context of higher art education. Openness to non-linearity and the establishment of favourable conditions for individual and creative development can promote change and ensure the quality of training of future art professionals.

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Conflict of Interest

None.

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Стратегії нелінійного мислення в постнекласичній вищій мистецькій освіті: Синергетична концепція

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Анотація

Актуальність. Актуальність теми зумовлена поняттям "нелінійності" як концептуальної ідеї філософії освіти, що передбачає новий спосіб мислення в контексті сучасної транзитивної, нелінійної трансформації українського суспільства.

Мета. Мета дослідження - зрозуміти значення стратегій нелінійного мислення в сучасному освітньому контексті та зробити цінний внесок у розвиток науки і мистецтва.

Методологія. Для досягнення мети та реалізації концептуальних ідей було обрано низку дослідницьких та пошукових методів: понятійно-термінологічний аналіз, порівняльний аналіз, синтез, узагальнення наукових поглядів, екстраполяція теоретико-методологічних положень. Методи дослідження базуються на концепціях нелінійної динаміки та синергетики як міждисциплінарного наукового знання.

Результати. Основними результатами дослідження є виявлення можливостей реалізації стратегій нелінійного мислення в контексті вищої мистецької освіти. Обґрунтовано необхідність розширення форм і методів мистецької освіти та їх зв'язку з сучасним виробництвом і сферами суспільного життя. Дослідження демонструє, що механізмом реалізації цих стратегій у змісті вищої мистецької освіти є: фундаменталізація знань, подолання їх розпорошеності та фрагментарності, запровадження міждисциплінарної наукової інтеграції знань, урізноманітнення форм і методів мистецької освіти та їх зв'язок з виробництвом, а також зв'язок з основними сферами суспільного життя (дуальні форми навчання, продукування нових знань за допомогою різноманітних освітніх методів проєктивного та дослідницького характеру).

Висновки. Практичне значення дослідження полягає в тому, що впровадження нелінійних стратегій у вищій мистецькій освіті сприяє глибокому розвитку студентів мистецьких спеціальностей, допомагає їм адаптуватися до постійних змін у сучасному світі, сприяє становленню творчих та інноваційних рішень у мистецькій сфері.

Ключові слова: міждисциплінарність; самоорганізація; творчість та інновації; фахівці в галузі мистецтва; "емерджентність".