

A Creative Approach to Preparing Inclusive Music Lessons: The Role of Neuropedagogy in Inclusive Music Education

Iryna MAIDANIUK*¹,

Viktor KAVUN²

Nataliia TVERDOKHLIB³

Larisa BIRYUKOVA⁴

Tetiana DOROSHENKO⁵

Iryna MASHTALER⁶,

¹ National University of Life and Environmental Sciences of Ukraine, ORCID ID:

<https://orcid.org/0000-0001-8096-0244>,
i@ukr.net

² Honored Artist of Ukraine, Associate Professor of the Department of Cultural Studies, National University of Life and Environmental Sciences of Ukraine (NUBiP), ORCID ID:

<https://orcid.org/0000-0001-5806-3299>,
v_kavun@ukr.net

³ Candidate of Pedagogical Sciences, Teacher, Communal Higher Education Institution “Vynnytsia Humanities Pedagogical College”, ORCID ID: <https://orcid.org/0000-0001-5999-874X>, tverdohlebnataliya951@gmail.com

⁴ Candidate of Pedagogical Sciences, Associate Professor of the Head of Choreography and Musical Art Department of the Educational and Scientific Institute of Culture and Art's, Sumy State Pedagogical University named after A. S. Makarenko, ORCID ID:

<https://orcid.org/0000-0001-8601-2800>,
lara123455@gmail.com

⁵ Doctor of Pedagogical Sciences, Full Professor, Professor at the Department of Arts Disciplines, T.H. Shevchenko National University “Chernihiv Colehium”, ORCID ID:

<https://orcid.org/0000-0002-8751-421X>,
ratjanadoroshenko25@gmail.com

⁶ Candidate of Sciences in Physical Education and Sports, Associate Professor of the Department of Theoretical Foundations and Methods Physical Education, Volodymyr Hnatyuk Ternopil National Pedagogical University, ORCID ID: <https://orcid.org/0000-0001-5033-2562>, pqtnitsa13@gmail.com

Abstract: *The article discusses the issue of music education for children with special needs in children's art schools. It highlights the most relevant problem, namely, insufficient knowledge among music school teachers and art school teachers about the peculiarities of development and learning of such children. Besides, a significant gap in today's music education is the lack of appropriate methods and techniques of music instruction that are suitable for learners with special educational needs. The article shows the most common disorders that allow for education in children's music schools, reveals the difficulties encountered in teaching children with developmental delays and provides corresponding recommendations. The authors of this article believe that principles widely applied in corrective pedagogy can contribute to music education in children's art schools. These principles include minimization, accessibility, cyclicity, intensification and comprehensiveness. When adapted to music pedagogy, they can be successfully incorporated into the educational process. Also, the article defines the category of children with special needs and describes a creative approach to preparing inclusive music lessons. Finally, it characterizes inclusion in music for children with developmental delays in mental and language abilities and identifies the role of neuropedagogy in inclusive music education.*

Keywords: *Music education, children with special needs, correction methods, neurodidactic, principles of inclusive learning.*

How to cite: Maidaniuk, I., Kavun, V., Tverdokhlib, N., Biryukova, L., Doroshenko, T., & Mashtaler, I. (2023). A creative approach to preparing inclusive music lessons: the role of neuropedagogy in inclusive music education. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 14(4), 242-253. <https://doi.org/10.18662/brain/14.4/503>

Introduction

Today, children with special needs have much broader educational opportunities than a decade or two ago. Inclusive education, which has been actively developing in recent years, has affected all levels, namely, primary, secondary, higher and, last but not least, additional education.

More and more children with health issues are enrolling in children's music schools and art schools. According to data as of 2022, the number of students who cannot cope with the educational programmes of primary school is about 30-40%, while approximately 70-80% of them need specific methods and techniques of instruction. It is worth emphasizing that these are considerable figures.

As practice shows, music school teachers are frequently unprepared to work with such children. The reason is the lack of special defectological education, low awareness of the peculiarities of development and learning of children with special needs and psychological unreadiness to accept them. Moreover, not all art schools have internally established rules for admission and conducting lessons for children with special needs. This circumstance generates even more misunderstandings in defining the goals and objectives of the corresponding teaching.

Recently, there has been a boost in research on the issues of organizing music education and its role in the development of children with special needs. Numerous studies are dedicated to music education of preschool-age children with special educational needs, as well as children residing in childcare institutions and specialized boarding schools.

At the same time, as proved by Billington (2017, p. 870), Chournazidi (2016, p. 2176) and Eagleton (2015, p. 1), as society is becoming increasingly digitized, inclusive education, which is established to make sure all students, in particular, have access to all kinds of education, gives priority to neurotechnologies and neurotechnological gadgets. The hopes of inclusive education lie in the neurotechnological development of the present. However, there are numerous problems, including spiritual-moral and psychosocial "opacity" and ambiguity of the advances, the goals of their creation, application and correction. The issue of evidence-based and scientifically substantiated data of these advances intertwines with ethical, cultural-ethical and psychological problems, as well as the absence of a neurotechnological culture in inclusive education.

The article aims to define the category of children with special needs, describe a creative approach to preparing inclusive music lessons, characterize inclusion in music for children with developmental delays in

mental and language abilities and identify the role of neuropedagogy in inclusive music education.

Defining the Category of Children with Special Needs

It is noteworthy that the category of children with special needs encompasses those with a vast array of physical, mental and emotional disorders. Practice shows that not all disorders can be visible. Some conditions can only be diagnosed by a medical-psycho-pedagogical commission. These may include certain forms of epilepsy and cerebral palsy accompanied by delayed mental and language development, as well as ADHD (attention deficit hyperactivity disorder). Parents of such children are normally willing to disclose their diagnoses and prefer to enrol them in music school based on general criteria, especially if the disorders are mild or moderately expressed and not immediately noticeable.

A medical certificate confirming the child's status as a person with special needs is provided at the parent's request. Hence, music schools often confront the obstacle of uncovering such children and guaranteeing their ongoing schooling (Kasymova et al., 2021, p. 464).

In some cases, slow progress among children who have successfully passed the entrance exams and demonstrated sufficient musical abilities can be attributed to the insufficient development of intellectual functions corresponding to their age, particularly those involving visual and auditory analysis. Consequently, they may struggle with recognizing and memorizing musical symbols, connecting the sound of their voice with the musical instrument, experiencing attention deficits and encountering other challenges. Therefore, existing programmes must meet the educational needs of children with special needs to make their learning comprehensive and effective.

Comenius (2020) clarified the need for an adapted educational programme (p. 101). He believed that the priority areas of the educational institution providing education for children with special needs are aimed at ensuring their full and comprehensive development.

Numerous scientific and methodical sources highlight the importance of music lessons for both correction and socialization of children with special needs.

A Creative Approach to Preparing Inclusive Music Lessons

Indeed, properly organized music lessons can provide significant assistance in normalizing mental development, namely, spatial orientation, reaction speed, the ability to compare and draw conclusions, self-control and

bodily movements. When learning to play a musical instrument, one coordinates movements and develops fine and gross motor skills. In turn, this affects language development, as well as enhances memory and emotionality. Music-making helps children become more liberated, willingly and effortlessly interact not only with the teacher but also with their peers. It encourages comprehensive intellectual, musical and psychological growth.

A detailed analysis of musical correction as one of the areas in music education shows that teaching methods for instrumental playing for children with minor developmental disorders have not yet been developed. It is still relevant to specify methods of organizing instrumental playing lessons for children with special needs in children's art schools and music schools.

Music education for children with delayed mental and language development has several significant differences compared to teaching their normotype peers. The difference lies primarily in the goals and objectives of learning.

The main aim of working with children with special needs should be the correction of their development through the means of musical art. In this case, music education will only be possible through the synthetic interaction of two pedagogical fields, i.e., musical and correctional. Taking into account the psycho-physical abilities of such children, instruction should be planned, and results should be predicted.

At the same time, correctional and pedagogical goals should meet the following requirements: a) formulated in a positive form and evoking a child's desire to achieve them; b) realistic and consistent with the duration of the work; c) taking into account the child's individual and psychological abilities. Concerning duration, this question is resolved individually for each child. The main criterion here should be the child's condition, as well as the optimal duration of active attention and receptiveness possible for him/her.

Importantly, individual lessons should be tailored to accommodate children with special educational needs, their restlessness, attention deficit and often impulsivity in movements. Therefore, teachers should be able to change activities as often as possible during the lesson, actively engage children's attention with vivid imagery and comparisons, use video and photo materials and diversify the course of the lesson, including the viewing of works of art by prominent painters.

Inclusion in Music for Children with Developmental Delays in Mental and Language Abilities

Choir activities in groups are particularly beneficial for children with delayed mental and language development since they improve speech and pronunciation and facilitate social adaptation. However, engaging in excessively large choir groups may not yield significant results as such children may not receive sufficient attention from the teacher. Frequently, when the choir director is engrossed in working with other children, children with special needs are left without guidance. Accordingly, this may result in negative behaviour and an uncomfortable atmosphere within the choir.

It is recommended to conduct choir sessions in small groups in which the teacher can dedicate sufficient time to each student. Instrumental teaching for children with delayed mental and language development requires a special approach. It is rather challenging to capture and sustain their attention for extended periods. Attention deficit is the foundation of developmental delay. Hyperactivity of the nervous system and an imbalance between excitatory and inhibitory processes hinder information acquisition. Accordingly, the primary goal of the teacher's work in this context is to fascinate and enliven these students, introducing them to the mysterious and enchanting world of music (Blakemore et al., 2006, p. 199).

In this regard, much emphasis should be placed on repertoire selection. It is preferable to provide short pieces with a memorable and vibrant melody, presented in an accessible manner. It is important to construct pieces in a well-organized and progressive manner, considering the level of complexity, without overburdening children with an abundance of musical notations in the score. Also, it is essential to give them a short and uncomplicated piece that can be quickly and easily memorized. Ideally, such children should derive enjoyment from the process of learning the piece and experience joy in its performance. It has been proven that when an inappropriate selection of songs is chosen, pupils rapidly lose enthusiasm for their music lessons and leave art schools (Caine & Caine, 2010, p. 5).

Besides, the teacher needs to enhance such children's thinking skills and psychomotor reactions and cultivate their aesthetic emotions and feelings. Children, while learning to play musical instruments, constantly challenge themselves and their abilities, striving to accomplish tasks that are difficult for them. The teacher should take this into account, showing patience and maintaining a calm tone during the lessons.

In music lessons, all elements of working with musical texts can be challenging for children with developmental delays. Since developmental delays in mental abilities are accompanied by underdeveloped gross and fine motor skills, such children need to coordinate their movements during the process of learning to play a musical instrument. These issues often result in difficulty in producing the desired sound, as well as being unable to assess the power of the sound according to the amount of pressure applied to the keys, leading to a sense of stiffness in the technique of playing (Jensen & McConchie, 2020, p. 98).

When working with children with special educational needs, it takes longer than with normotype children to learn musical notation. At the same time, more time needs to be devoted to each element of working with a musical text, such as analyzing the text, coordinating both hands and memorizing the material. Public performances for these children are also not always possible due to various reasons, including general psychological insecurity about their abilities, as well as pathological conditions of the nervous system accompanied by tics, compulsive movements and arbitrary external factors, namely, desires to change position or switch to another object without completing the performance. Therefore, the same assessment methods used for normotype children should not be applied to these children. Instead of only considering performance, assessing their musical ability on an instrument should be based primarily on their evaluation of progress made in the past.

When preparing music lessons for children with special needs in children's art schools, it is crucial to consider their primarily corrective nature. The teacher's goal in working with such children is to assist them in correcting their developmental disorders through the means of musical art.

Therefore, it is essential that instrumental teaching primarily focuses on corrective tasks:

- to building up an emotional lexicon to better understand the emotional nuances of the music being analyzed, teach to articulate emotions verbally and select suitable terms;
- to incorporate music education techniques, including clapping and tapping, to nurture a sense of meter and rhythm;
- to inspire creative thinking and fantasy;
- to focus on attaining the highest level of flexibility and dexterity of hand movements while keeping in mind one's aptitudes while practicing accurate synchronisation and coordination of all movements of the instrumental apparatus;

- to broaden the scope of knowledge both general and musical, and gain insight into the surrounding world;
- to cultivate auditory attention and an individualized approach to sounds;
- to structure instruction with the purpose of building up all elements of musical perception, including pitch, dynamics, tonality and timbre (Rosenberg-Kima et al., 2020, p. 3).

These tasks can be complemented based on the quality and degree of developmental disorders in children. At the same time, general principles of corrective pedagogy can be applied, such as minimization, cyclicity, intensification and comprehensiveness.

The principle of minimization is a methodological principle of teaching that involves selecting a minimum amount of language, speech and sociocultural material. It entails selecting a minimum amount of content and forms in the selection and mastery of musical material. This principle is driven by the limited mnemonic functions of the brain and deficits in attention. Condensed, concentrated and presented in an accessible form, a dose-controlled material in short time intervals will be better perceived and assimilated.

The principle of accessibility is based on the step-by-step construction of the educational process. It is also applied to the selection of musical material and the choice of pedagogical communication methods. The language of the teacher should be precise and concise, close to aphoristic form.

The principle of cyclicity implies a regular revision of the material studied in the lesson. It is extremely important for consolidating the covered material, acquired skills and abilities. It allows for multiple revisions of new rules or learned sound sequences during the lesson for memorization and reinforcement.

The principle of intensification aims to accelerate the pace of learning the educational material, which involves multiple alternations of work formats, the inclusion of problem-based learning through a series of questions and other methods designed to facilitate assimilation and memorization.

The principle of comprehensiveness is a principle that entails the comprehensive development of the child's personality.

By adhering to these tenets, teachers can improve the efficacy of music classes for children with special needs, driving their progression and

fostering a supportive and integrated learning setting (Kosholap et al., 2021, pp. 178–179).

The Role of Neuropedagogy in Inclusive Music Education

The main goal of neuropedagogy in inclusive music education is to build a system of teaching and learning that optimally considers the individual neuropsychological characteristics of children (a neuropsychological profile) based on research on the brain foundations of human mental activities related to perception, preservation, processing and recreation of acquired information and experience in inclusive music education. This system should be able to integrate with a person-centred approach to education to help children in self-development by providing a sufficiently diverse, enriching, developmental, corrective, comfortable and safe educational environment. Consequently, education can be seen not only as the process and outcome of acquiring knowledge and skills (competencies) but also as the transformation of students' inner experience, which bears the imprint of their life situation and their unique individuality in inclusive music education.

Neurodidactics in inclusive music education traces and modifies the development of educational technologies (brain-based learning; mind, brain & education science) taking into account important discoveries in the field of neurology. It aims to implement the data obtained from contemporary brain research into the practice of teaching in inclusive music education. Drawing on neurobiology and psychological insights into education, neurodidactics collects data on the activities of the brain and how people learn as a result of brain studies (Honchar et al., 2021, pp. 366–369).

Interestingly, neurodidactics combines didactic or pedagogical concepts of learning with today's knowledge of neurobiology and other brain sciences. Neurological discoveries have been the subject of extensive discussion, but often in a truncated form that does not contribute to solving specific practical tasks in inclusive education. The main attention is paid to individual abilities, talents and interests.

Relying on one's identified abilities and readiness to engage in specific activities, it is possible to foster one's personal development as a partner or a professional, expanding one's horizons and influencing one's values, goals, behavioural models and communication patterns.

Many specialists in neurodidactics indicate that they aim to assist teachers in inclusive music education in implementing “adequate cognitive

learning” based on an understanding of one’s inner experience and internal processes of cognitive, conceptual and emotional information processing.

However, most issues related to neurodidactics and neurology remain open. Neurologists may describe, for instance, the neural basis of the educational process and, yet, they fail to fully grasp the complexity of the tasks that teachers face every day. Issues concerning the future of teaching in schools and universities, such as educational matters and teacher-student relations, are fraught with unresolved problems, including the capacity and limitation of neuroeducational technologies (Blakemore et al., 2006, p. 71).

When one believes that knowledge is not transmitted automatically but is created “anew” in the student’s brain, the resulting construct becomes completely illogical and represents a “mixture” of concepts.

Based on existing knowledge of brain function and structure, scientists and practitioners in inclusive music education identify a range of principles to enhance learning effectiveness, taking into account the characteristics of brain activity. They are the following:

- It is beneficial to refer to previously learned material at the beginning and during the lesson, providing a “priming effect” and preparing students for better perception and subsequent retention of new material.
- It is beneficial for students to independently structure and organize the presented material and work on projects.
- It is useful to employ various forms of collaborative group work and multimedia.
- It is important to identify and develop an interest in the subject of study, which promotes students’ motivation to learn and their overall development.
- It is crucial to prevent educational stress that inhibits cognitive activity and, instead, create a psychologically supportive atmosphere that stimulates students’ engagement.

The attempts to structure current achievements of neuropedagogy in inclusive music education have led researchers to understand that despite declarations and projects describing neurodidactics as some epoch-making, innovative paradigmatic phenomenon, the overall outcome is occasionally highly insignificant and trivial. An exception is the use of digital neurotechnologies in inclusive music education, which serve as a way to “cancel” traditional education and traditional didactics. This has an essential importance for teaching, including inclusive pedagogy.

Nevertheless, the efficient use of these technologies is only possible when they are subordinated to the objectives of didactics and the interaction between teachers and students.

Conclusions

The importance of the article lies in the fact that it defines the category of children with special needs. This category covers children with a wide range of physical, mental and emotional disabilities. Practice shows that not all disorders can be visible. Some conditions can only be diagnosed by a medical-psycho-pedagogical commission. These may include certain forms of epilepsy and cerebral palsy accompanied by delayed mental and language development, as well as attention deficit hyperactivity disorder (ADHD).

Also, the article describes a creative approach to preparing inclusive music lessons. It proves that inclusive music education currently deals with many challenges and requires the expansion of methods for developing children with special needs through music art and new methodical approaches. At the same time, teachers are forced to seek non-conventional solutions and new means of music-pedagogical interaction. One might hope that shortly, intuitive approaches in music education will be replaced by well-grounded, thoroughly tested methods of teaching and learning based on the integration of corrective and music pedagogy.

Finally, the article characterizes inclusion in music for children with developmental delays in mental and language abilities and emphasizes the recommendations for choir activities in small groups, in which the teacher can dedicate sufficient time to each student. Instrumental teaching for children with special needs requires a special approach. It is frequently challenging to engage and sustain their attention for an extended period, as attention deficit is a foundation of developmental delays. The overexcitability of the nervous system and the dominance of excitation processes over inhibition hinder their ability to assimilate information. Therefore, the most crucial aspect of the teacher's work is to captivate and fascinate such children, introducing them to the mysterious and enchanting world of music. The authors of this article believe that special attention should be paid to repertoire selection. It is preferable to choose short pieces with catchy melodies, presented in an accessible manner. It is also important to construct pieces in a skill-level-appropriate and coherent manner, without overwhelming one with an abundance of musical notations in the score. If the repertoire is poorly chosen, one quickly loses interest in music lessons.

Furthermore, the relevance of this article consists in identifying the role of neuropedagogy in inclusive music education. Relying on existing knowledge of the functioning and structure of the brain, scientists and practitioners in

inclusive music education reveal a range of principles to enhance learning effectiveness, taking into account the specificities of brain activity.

Acknowledgement

Author 1 defined the category of children with special needs. Authors 2 and 3 described a creative approach to preparing inclusive music lessons. Authors 4 and 5 characterized inclusion in music for children with developmental delays in mental and language abilities. Author 6 identified the role of neuropedagogy in inclusive music education.

References

- Billington, T. (2017). Educational inclusion and critical neuroscience: Friends or foes? *International Journal of Inclusive Education*, 21(8), 866–880.
<https://doi.org/10.1080/13603116.2017.1283717>
- Blakemore, S.-J., Frith, U., & Beister, H. (2006). *Wie wir lernen. Was die Hirnforschung darüber weiß* [How we learn. What brain research knows about it]. Deutsche Verlags-Anstalt. <https://www.amazon.de/Wie-wir-lernen-Hirnforschung-dar%C3%BCber/dp/3421059225>
- Caine, N. R., & Caine, G. (2010). *12 brain/mind natural learning principles expanded. Overview of the systems principles of natural learning*. Caine Learning Center. <https://docplayer.net/26505333-12-brain-mind-natural-learning-principles-renat-e-n-caine-ph-d-and-geoffrey-caine-ll-m.html>
- Chournazidi, A. (2016). The social framework of learning via neurodidactics. *Creative Education*, 7, 2175–2192.
<https://www.scirp.org/journal/paperinformation.aspx?paperid=70686>
- Comenius, J. (2020). *The Great Didactic of John Amos Comenius*. Wyatt North Publishing.
https://www.google.com.ua/books/edition/The_Great_Didactic_of_John_Amos_Comenius/W-bkDwAAQBAJ?hl=ru&gbpv=0
- Eagleton, T. (2015). The slow death of the university. *Chronicle of Higher Education*.
<https://www.chronicle.com/article/the-slow-death-of-the-university/>
- Honchar, L., Derkachova, O., Shakhrai, V., Saienko, V., Hladoshchuk, O., & Voropayeva, T. (2021). Formation of psychological readiness of the teacher to implement information and communication technologies in professional activities. *International Journal of Education and Information Technologies*, 15(38), 364–371.
[https://www.naun.org/main/NAUN/educationinformation/2021/a762008-037\(2021\).pdf](https://www.naun.org/main/NAUN/educationinformation/2021/a762008-037(2021).pdf)

- Jensen, E. P., & McConchie, L. (2020). *Brain-based learning: Teaching the way students really learn*. Corwin. <https://www.amazon.com/Brain-Based-Learning-Teaching-Students-Really/dp/1544364547>
- Kasymova, S., Place, J. M. S., Billings, D. L., & Aldape, J. D. (2021). Impacts of the COVID-19 pandemic on the productivity of academics who mother. *Gender, Work & Organization*, 28, 419-433. <https://doi.org/10.1111/gwao.12699>
- Kosholap, A., Maksymchuk, B., Branitska, T., Martynets, L., Boichenko, A., Stoliarenko, O., Matsuk, L., Surovov, O., Stoliarenko, O., & Maksymchuk, I. (2021). Neuropsychological bases of self-improvement of own physical health of future teachers in the course of university education. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 12(3), 171–190. <https://doi.org/10.18662/brain/12.3/226>
- Rosenberg-Kima, R. B., Koren, Y., & Gordon, G. (2020). Robot-supported collaborative learning (RSCL): Social robots as teaching assistants for higher education small group facilitation. *Frontiers in Robotics and AI*, 6, Article 148. <https://doi.org/10.3389/frobt.2019.00148>