

Methodological Concepts of The Integration of Neuropedagogy And Literary Literacy

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Abstract: This article analyzes the methodological foundations of integrating neuropedagogy and literary literacy. The author substantiates that the harmonization of these two directions in education effectively activates cognitive, emotional, and meaning-making processes in human consciousness. Neuropedagogy is described in connection with cognitive and affective neuro-approaches, emotional and logical reception of literary texts, and the formation of personal attitudes. Furthermore, the principles of individualization, naturalness, neuroplasticity, and learner-centered education are presented as innovative bases for the development of literary literacy. The article also outlines practical directions for fostering artistic perception and personal meaning-making ability through integrated learning environments, neuro-reflexive approaches, and multimodal analysis methods.

Keywords: Neuropedagogy, literary literacy, cognitive neuro-approach, affective perception, personal meaning, neuropsychology, integrated education, sensorimotor activity, artistic perception, speech activity, neuro-reflexive approach, educational methodology.

Introduction: Although neuropedagogy and literary literacy belong to different fields of education, a more specific analysis reveals their close interrelation. Both are aimed at shaping an individual's cognitive activity, thinking ability, engagement with language and text, comprehension of meaning, and development of emotional and social experience. From this perspective, conducting a comparative methodological analysis of these two concepts is important for identifying their educational functions, methodological positions, and scientific foundations, as well as for determining their commonalities and opportunities for integration.

Examining the role of both directions in education demonstrates that their functions are interrelated and complementary. Neuropedagogy organizes the learning process by considering the learner's physiological and cognitive state, while literary literacy serves this process by generating content and meaning, fostering personal reflection, and supporting spiritual development through the perception of texts. Therefore, integrating these two fields from a methodological perspective creates significant opportunities not only in theory but also in practice.

In the scientific study of neuropedagogy and literary literacy, both similarities and differences can be observed in their approaches, research objects, and methodologies. Their common ground lies in the fact that both are directed toward the study of conscious human activity—processes of cognition, perception, thinking, comprehension, and reasoning. In neuropedagogy, these processes are primarily explained through brain activity, neurophysiological mechanisms, and cognitive functions, while in literary literacy, they are grounded in the learner's interaction with literary texts, meaning-making, and processes of personal interpretation. From a scientific perspective, both fields take as their research object the individual's cognitive abilities, speech activity, and socio-cultural consciousness. Therefore, elements of cognitive psychology, educational philosophy, and psycholinguistics emerge as shared foundations across both. However, there are also notable distinctions. Neuropedagogical research is based mainly on scientific principles related to biological, neurological, and psychophysiological processes. It prioritizes the study of how factors such as activity in specific brain regions, neural connections, mechanisms of attention

and memory, stress, and emotional states influence the teaching and learning process. Research methods in this field often include experimentation, neuropsychological testing, functional MRI, and other precise measurement techniques.

By contrast, literary literacy is studied primarily within the domain of social, cultural, and linguistic activity. Its focus lies on the analysis of literary texts, the learner's processes of meaning-making, the formation of personal opinions and attitudes, verbal expression, and creative writing. The predominant research methods in this field include text analysis, surveys and interviews, didactic observation, lesson analysis, and creative assignments. The development of literary literacy in modern education should not be confined solely to linguistic and methodological approaches, but must also be enriched with neuropedagogical perspectives. This is because processes such as reading, comprehension, analysis, and personal meaning-making of literary texts are directly connected to the individual's neurocognitive activity—namely, mechanisms of attention, memory, thinking, emotion, and speech. In this regard, applying neuropedagogical approaches to the development of literary literacy provides a foundation for organizing the educational process in a way that accounts for the learner's brain activity, psychological state, and individual learning characteristics.

Neurocognitive factors such as brain activity, memory capacity, meaning-making processes, and emotional perception play a crucial role in ensuring the effective development of literary literacy. Interaction with a literary text activates complex processes in the human mind. In this process, the reader does not merely read the text but, through it, creates meaning, perceives artistic imagery, and establishes an emotional connection. The areas of the brain responsible for language and meaning—particularly Broca's and Wernicke's regions, as well as frontal cortical activity—enable the learner to develop the ability to recognize language, generalize textual content, and form personal conclusions.

The process of memory involves perceiving and recalling the chain of events in the literary text, the characters' traits, symbols, and ideas. For durable memory, however, the emotional reception of information is essential, as emotional impact supports the formation of long-term memory in the brain. Empathy during reading, the feeling of sympathy for a character, and the sense of personal involvement in events awaken emotional perception. This, in turn, fosters a deeper attitude toward the literary text and facilitates the extraction of meaning from it.

The neurobiological foundations of these processes have been studied by American scholar Maryanne Wolf, who emphasizes that: "Reading is not a natural process... it requires the coordinated work of several neural systems, only then is fluent comprehension and response to text possible" [1; 18]. In other words, reading is not innate to humans but an acquired process, in which different neural systems of the brain must learn to function together. These insights demonstrate how active the human brain is in understanding and responding to literary texts. Therefore, applying neuropedagogical approaches that consider brain activity, memory processes, meaning-making, and emotional perception in the development of literary literacy becomes a crucial condition for fostering moral awareness and aesthetic taste in learners. This approach serves not only to impart knowledge but also to cultivate meaning-making, personal emotional engagement, and artistic perception.

In the development of literary literacy, cognitive, emotional, and sensorimotor mechanisms operate in interconnection. Working with literary texts is not merely the acquisition of lexical information but also encompasses complex psychological and neurophysiological processes such as knowledge processing, the formation of personal attitudes, and emotional engagement. Cognitive mechanisms—namely attention, thinking, reasoning, memory, and logical inference—are decisive in the learner's deep understanding and analysis of the text. Activities such as comprehending the sequence of events, recognizing relationships between characters, and grasping plot development are carried out precisely on the basis of these cognitive functions. At the same time, it is impossible for a literary text not to evoke emotional responses and touch the reader's heart. Emotional mechanisms are manifested through feelings such as empathy with the situations depicted in the text, attitudes toward the fate of characters, and experiences of aesthetic pleasure. As a result of such perception, information is not only retained more deeply in memory but also leaves a moral and spiritual impression on the individual. Thus, literary literacy is not merely an intellectual activity but also a process closely linked to emotional consciousness and empathy.

Sensorimotor mechanisms play a particularly important role in the reading process, especially among primary school students. Reading aloud, choosing the appropriate intonation and tempo, perceiving pauses and stresses in the text, as well as imagining artistic speech in vivid images are all directly connected with sensorimotor activity. This activity, especially in

children, enhances the emotional impact of artistic images, aids in understanding the depiction of events, and contributes to the development of thinking and memory.

French neurobiologist Jean-Pierre Changeux, in his theory of “neuro-artistic reception,” emphasizes: “Emotion, cognition, and sensorimotor activity are not separate processes in the brain – they interact in real time and collectively shape the meaning we assign to the world and to texts” [2; 142]. In other words, emotion, thought, and sensorimotor activity do not function in isolation in the brain, but in dynamic interaction and harmony, serving as the basis for meaning-making in human life and in relation to literary texts.

When analyzing literary literacy from a neuropedagogical perspective, affective and cognitive neuro-approaches are regarded as key scientific foundations. The affective neuro-approach highlights the role of the learner’s emotional state, impressions, and internal psychological experience in the educational process, which is of particular importance in the reception of literary texts. The essence of literary works lies not only in transmitting information but also in touching the reader’s heart, awakening emotions, providing aesthetic enjoyment, and evoking empathy. Accordingly, the affective neuro-approach explains, from a neurobiological perspective, how the learner engages emotionally with a text—what feelings arise during interaction, how they respond to the characters’ destinies, and how they experience events.

The cognitive neuro-approach, on the other hand, is aimed at explaining, from a neurophysiological perspective, mental activities such as acquiring knowledge, processing it, retaining it in memory, conducting logical analysis, drawing conclusions, understanding linguistic tools, and generating meaning. In the context of literary literacy, these processes are clearly manifested in the reader’s understanding of the images, plot, artistic devices, the author’s idea, and the structural composition of a literary text. In the cognitive neuro-approach, the brain regions responsible for language and memory, the centers managing attention, and the activity of the frontal lobes play a decisive role. For example, in order to correctly grasp a metaphor in a literary text or to feel the inner conflict of a character, several parts of the brain become active simultaneously.

These two neuro-approaches appear in harmony within literary literacy. Cognitive processes ensure the comprehension and analysis of the literary text, while affective processes shape the ability to feel it, express personal attitudes, and provide aesthetic evaluation.

From this perspective, the development of literary literacy requires not only knowledge and technical skills but also an approach that takes emotional states into account. For instance, a sense of empathy towards a character’s fate develops not only the reader’s comprehension but also their capacity for moral perception. At the same time, through the cognitive neuro-approach, opportunities are created to logically structure the text, understand its ideological core, and analyze the author’s position.

The processes of reading, comprehension, and analysis of a text encompass a very complex and multi-stage set of neurophysiological activities in the human brain. This process is ensured by the coordinated functioning of various areas of the brain – Broca’s and Wernicke’s centers responsible for language processing, the processing regions (frontal lobes), and structures such as the hippocampus and amygdala responsible for memory and emotions. During reading, the information received visually through the eyes is encoded in the brain’s language centers, and the understood words and expressions are processed structurally and semantically. Furthermore, the reader connects the content of the text with their personal experience, memory, and knowledge, which is linked to the activity of the hippocampus.

In shaping and developing literary literacy, it is of great importance to integrate scientifically grounded neuropedagogical principles into the educational process. This is because reading, understanding, and analyzing a literary text depend not only on linguistic or methodological skills but also directly on the brain’s abilities to perceive, memorize, feel, and create meaning. The principles formed within neuropedagogy – such as natural conformity, individualization, learner-centeredness, neuroplasticity, and integrativeness – can also be effectively applied in literary education. Accepting these principles as a guideline in the development of literary literacy creates opportunities to enrich the educational process not only cognitively but also emotionally and socially. In the development of literary literacy, the main principles of neuro-pedagogy—individualization, learner-centeredness, naturalness, and neuroplasticity—play an important role in organizing the educational process effectively. These principles emphasize teaching that takes into account the learner’s personal characteristics, psychological state, cognitive ability, and emotional thinking.

According to the principle of individualization, every learner’s process of perceiving, understanding, and analyzing a literary text is unique. One student may quickly grasp the meaning and extract the idea, while another may experience the emotional and aesthetic

essence of the text more deeply through empathy. Therefore, in shaping literary literacy, it is necessary to choose approaches that match the learners' level of knowledge, style of thinking, and emotional capacity. Neuro-pedagogical technologies help to develop differentiated teaching that considers these individual differences.

The principle of learner-centeredness places the student at the center of the educational process, viewing them as an active creator of meaning, a thinker, and an evaluator. Since literary literacy is not only about acquiring knowledge but also about forming personal attitudes, expressing opinions, and enriching the inner world through analysis, this principle is especially important.

The principle of naturalness requires that the educational process be organized in harmony with human nature. This refers to structuring lessons according to neurophysiological rhythms, natural shifts in attention, emotional sensitivity, motor activity, and the ways information is received. For example, preparing students emotionally before reading a literary text, giving real-life examples, allowing silence, and giving space for emotional reactions are all applications of this principle.

The principle of neuroplasticity is based on the brain's ability to change and develop. According to this principle, neural connections are constantly renewed, and new pathways can form through learning. In literary literacy, this means gradually studying, analyzing, and interpreting complex texts and learning to express opinions about them. Through practice and experience, the learner becomes a more active and independent participant in understanding texts. One of the scholars, N. V. Lazarev, summarizes these ideas as follows:

"If education is organized in accordance with the natural rhythms of brain activity, personal needs, and cognitive abilities, it forms long-term, deep, and well-assimilated knowledge in the learner." [3; 87]

In the development of literary literacy, integrated learning environments and neuro-reflexive approaches are gaining significant importance in modern education. An integrated learning environment is not limited to the classroom but represents a complex educational space where the learner's cognitive, emotional, communicative, discursive, and creative activities are manifested together. In such an environment, literary literacy is not only taught according to the curriculum but also enriched through active participation, emotional impressions, multimedia technologies, group analysis, and creative tasks.

In an integrated environment, students working with literary texts do not stop at simply reading and understanding them; they also begin to grasp broader layers of meaning by connecting texts with knowledge from visual arts, music, cinema, social sciences, and psychology. Such a multidisciplinary approach deepens literary literacy and develops the learner's ability to see and analyze the context behind the text.

The neuro-reflexive approach is based on managing interaction and understanding during the learning process while taking into account the learner's internal thought processes, emotional state, and personal experience. It is not enough to analyze a literary text only from a cognitive perspective; how the learner receives it, what personal feelings it evokes, and what kinds of reflections and thoughts it generates must also become an integral part of the educational process. This approach proves especially effective in essays, personal interpretations, analysis through imagery, and creative reinterpretation tasks.

In the neuro-reflexive approach, the learner develops into a "source capable of expressing a personal opinion about the text they have read." The processes of assimilation in the brain are reinforced precisely through such personal thinking and emotional participation. On this matter, the German researcher H. Büttner writes:

"If the learner not only understands the content of a text but also connects it to their own worldview, then the process of learning is fully realized neurophysiologically in the brain." [4; 61]

In literary education, the combined application of neuro-pedagogical and psycholinguistic approaches serves to increase the effectiveness of the educational process. This is because the formation of literary literacy depends not only on linguistic knowledge but also on cognitive activity, speech ability, and processes of emotional and aesthetic reception. While neuro-pedagogy is aimed at organizing the learning process on the basis of brain activity and cognitive mechanisms, psycholinguistics studies how language and speech are formed in the mind and become active in practice. Therefore, the combined application of these two approaches in literary education ensures that the learner engages in a deep, meaningful, and active interaction with the literary text. In the process of working with a literary text, the student does not merely read the words, but also perceives the emotional and artistic weight, as well as the imagery and ideas behind each word. In this process, the functions of language are transformed into speech activity—that is, the learner records the meaning understood in their mind, reflects, and expresses

opinions. Speech activity, in turn, is carried out through the activation of neural networks in the brain, which is in profound harmony with neuro-pedagogical approaches.

Thus, literary literacy is not only the knowledge of language but also the ability to generate meaning. For the development of such an ability, it is necessary to organize learning activities with consideration of neuropsychological mechanisms. For example, exercises such as identifying the emotional impact of words in the text, analyzing the speech of characters, interpreting thoughts through inner monologues and dialogues, and verbally expressing one's personal attitude contribute to this process.

On these processes, the French neuropsychologist S. Deleize concludes: "The process of creating meaning occurs through the consistent organization of words in the brain, their integration with personal experience, and their reinforcement through emotional response. This process encompasses the entire chain in consciousness—from word to psychological impression." [5; 106] From this perspective, organizing lessons that take into account the neuropsychological foundations of language and speech in the formation of literary literacy develops in the learner not only comprehension but also the ability to generate personal meaning, think critically, and engage in artistic perception. This, in turn, transforms literary education into a learner-centered, impactful, and effective process.

In the process of working with literary texts, the close relationship between language and the brain serves as the main neuropsychological mechanism in shaping literary literacy. This is because a literary text is not merely a collection of information, but a system of meanings, emotions, images, and ideas. In order to perceive, understand, and form a personal attitude towards them, the information conveyed through language undergoes deep cognitive and emotional processing in the brain. When the learner reads a text, the processes of language reception, activation of semantic networks, comparison, generalization, and expression of emotional response work together. Through these processes occurring in the brain, words turn into content, content into ideas, and ideas into personal conclusions. From this perspective, the harmony between language and the brain in the process of working with literary texts becomes one of the key factors in determining the level of literary literacy of the learner. Researcher B.S. Ramazanov expresses this idea as follows: "The human brain is activated through language; it thinks, understands, and draws conclusions through language. In a literary text, language is not only a means of conveying information

but also a means of comprehending emotions and ideas." [6; 49]

In the formation of literary literacy, alongside traditional methodological approaches, the introduction of neuro-pedagogical integration is regarded as an innovative direction that meets the requirements of modern education. The methodological unity of neuro-pedagogy and literary literacy creates opportunities to ensure the learner's cognitive activity, emotional thinking, speech ability, and spiritual development in a comprehensive manner during the learning process. This integration makes it possible to organize education in a learner-centered, scientifically grounded way, in accordance with neuropsychological mechanisms. From this perspective, the impact, advantages, and future scientific-practical prospects of applying neuro-pedagogical approaches to the methodology of literary literacy require separate analysis.

The influence of neuro-pedagogical integration on the methodology of literary literacy is primarily manifested in the renewal of methods of analysis and evaluation. In traditional literary education, analysis was mainly aimed at identifying the author's intention, describing the system of plot and images, and listing artistic devices. Modern approaches, however, require restructuring this process with consideration of the learner's individual perception, personal attitude, and meaning-making activity. When based on the neuro-pedagogical approach, the analysis of a literary text is not only connected to academic knowledge but is also deeply interrelated with cognitive and emotional activity, speech expression, reflective thinking, and personal interpretation.

On the basis of neuro-pedagogical integration, the opportunities for shaping innovative approaches in literary education are expanding. In traditional lesson formats, explaining the literary text, delivering ready-made knowledge, and mastering theoretical rules held priority. Modern approaches, however, are aimed at activating the process of meaning-making in the learner's own consciousness. For this, the learning process must be implemented through the integration of neuro-pedagogical, cognitive, psycholinguistic, and information-communication technologies. Such approaches serve to form literary literacy not only at the level of knowledge and analysis but also as a means of shaping personal position, social interaction, and creative expression.

Innovative approaches include interactive research-based reading, creative rephrasing (reconstructing the text through experimentation), role-playing, audiovisual analysis, multimodal assessment, activities

that stimulate emotional-aesthetic perception, critical thinking technologies, and learning activities integrated with STEM elements. For instance, exercises such as staging an artistic event in the literary text through a neuro-based scenario, preparing an emotional monologue from the perspective of a character, or re-expressing meaning through visual or audio analysis are organized on the basis of neuro-pedagogical approaches. These methods activate brain activity through multi-channel stimuli, developing memory, attention, emotional sensitivity, and creativity.

The implementation of such innovative models, first of all, transforms literary literacy into a lively, experience-based, and learner-centered process. At the same time, it enables the formation of an active personality that meets modern requirements—that is, digitally literate, critically thinking, capable of selectively receiving information, engaging in social communication, and possessing mature moral consciousness. The active application of innovative approaches in literary education not only relies on methodological foundations but also makes it possible to fully realize the socio-cultural functions of education. This represents one of the most significant prospects of the influence of neuro-pedagogy on the methodology of literary literacy.

CONCLUSION

In conclusion, it can be said that the integration of neuro-pedagogy and literary literacy can be regarded as a practical manifestation of interdisciplinary approaches in educational methodology. This integration serves the holistic development of the learner's personality—forming cognitive, emotional, speech, and spiritual abilities in harmony. Neuro-pedagogical concepts envision the cultivation of literary literacy not merely on the basis of linguistic knowledge and skills of literary analysis, but also through personal meaning-making, critical thinking, emotional impression, and creative perception. In this process, principles such as brain activity, mechanisms of speech and language processing, cognitive and affective functions, neuroplasticity, and individual approach are taken as the foundation. As a result, literary education acquires a learner-centered, interdisciplinary, and innovative character, serving to develop in the learner not only literary knowledge but also conscious, emotional, and social maturity.

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