



# The Effect of Pedagogical Technologies in Ensuring Orthographic Literacy For Students

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**Abstract**

In this article, we will examine the multidimensional nature of spelling skills as a scientific phenomenon and its implications for research and education. Although spelling is a fundamental aspect of language proficiency, it is frequently disregarded in scientific research and educational discourse. However, spelling is not simply a matter of memorization and rule-based learning; it is a complex cognitive process that involves various linguistic, cognitive, and developmental factors.

**Keywords:**

phonetic-verbal foundation, scientific phenomenon, orthographic, psychology, linguistics, reading comprehension, roots, prefixes, suffixes

**Introduction:** The ability to accurately and efficiently write words according to established orthographic rules and conventions is known as spelling skill. This skill encompasses various competencies, including phonological awareness, letter-sound knowledge, understanding of spelling patterns and rules, visual memory, and morphological awareness. Spelling skill is a complex phenomenon that has been extensively researched in fields such as psychology, linguistics, and education. Researchers have explored the cognitive processes underlying spelling, including the role of working memory, attention, and executive function in accurate word encoding. Additionally, studies have investigated the development of spelling skills across different age groups and factors that influence individual differences in spelling proficiency. Neuroscientific research has also revealed the neural underpinnings of spelling, highlighting the involvement of brain regions associated

with language processing, visual perception, and motor control.

In addition, extensive research on spelling proficiency has made significant contributions to our understanding of literacy development and learning disabilities. Various studies have shed light on the connection between spelling skills and broader literacy abilities, such as reading comprehension and vocabulary acquisition. Furthermore, investigations into dyslexia and specific learning disabilities have uncovered the distinct spelling difficulties experienced by individuals with underlying cognitive impairments, providing valuable insights for diagnostic assessments and intervention strategies. The scientific study of spelling proficiency also holds implications for educational practice and pedagogy. By comprehending the cognitive processes and developmental trajectories of spelling, evidence-based instructional approaches can be developed to support students'

orthographic development. Educators can utilize research findings to design effective spelling instruction that integrates phonics instruction, word study, and explicit teaching of spelling rules and patterns. Additionally, being aware of the multi-modal nature of spelling proficiency can guide the implementation of diverse teaching strategies that cater to students' unique learning styles and needs.

**Literature review.** Various scientists and educators, including D.N.Bogoyavlensky, G.G.Granik, M.R.Lviv, T.G.Ramzayeva, K.D.Ushinsky, and others, have conducted studies on the development of spelling skills in students with mental retardation. D.N.Bogoyavlensky and his colleagues have emphasized the importance of analytical and synthetic thinking in the acquisition of spelling skills, which requires active and conscious learning[1]. Additionally, experts such as P.S.Zhedek, V.V.Repkin, N.N.Algazina, M.T.Baranov, M.R.Lviv, N.S.Rozhdestvensky, M.M. Razumovskaya, A.V.Tekuchev, and E.G.Shatov have highlighted the significance of identifying programs in text for successful spelling training. D.N. Bogoyavlensky has also noted that errors in spelling occur when temporary connections are disrupted, such as between auditory and articulatory properties of orthograms and their graphic form [1]. The uniqueness of spelling skills lies in its role as a component of speech activity, which includes proper sentence structure and stylistic word usage.

1. Designing a learning scenario that requires spelling verification. The objective of the training is to engage in a deliberate task.
2. Discovering a method to carry out a specific task.
3. Formulating an algorithm independently to execute actions in compliance with established rules.
4. Acting by the prescribed algorithm.
5. Consistently performing actions based on algorithms. Gradually simplifying the algorithm.
6. Attaining a level of automatism and reinforcing it further through repetitive exercises.

#### 7. Achieving automaticity in spelling[2].

It is important to acknowledge that S.L. Rubin's theories on the psychological nature of spelling skills highlight the conscious nature of this skill during its development. Once the skill is formed, it becomes a reliable tool for effectively expressing thoughts through writing. The absence of premeditation and awareness during the execution of spelling actions does not imply that they cannot be consciously repeated when needed. Similarly, individuals can exercise control over their spelling abilities by identifying and rectifying errors, provided they possess adequate knowledge of grammar and spelling.

The automation of spelling actions is a gradual process that is influenced by the complexity of the rule. Noteworthy psychologists, including D.N.Bogoyavlensky and L.S. Vygotsky, have extensively studied this process and shed light on its various aspects. They emphasize the gradual reduction of awareness in one's actions and the diminishing role of mental operations. These actions are combined, generalized, and automated, resulting in the student writing according to the rule without conscious reasoning. However, it is important to note that certain elements of spelling skills may remain non-automated until the very end, particularly those related to understanding the structure of the language. In recent decades, researchers have placed significant emphasis on improving the quality, sequence, and combination of these operations.

The development of spelling proficiency is a product of consistent practice and hands-on experience. When it comes to instructing spelling, significant focus is placed on studying activity patterns and devising strategies to enhance spelling effectiveness in alignment with these patterns.

Students with a moderate degree of mental retardation continue to develop their speech skills, although their self-service and motor skills may decline during their development. They can grasp the fundamentals of reading, writing, and counting, but their acquisition of skills and abilities is limited. These students can adapt to simple tasks under supervision. However, those with severe mental retardation

lack complete self-service skills and struggle with basic school skills. Even if they manage to learn basic labor processes, they still require constant supervision. These children often face motor disorders and have difficulties with speech. In cases of deep mental retardation, the ability to think does not develop properly. These students lack skills, experience only a few basic emotions, and their speech does not progress. Other students may have a limited ability to understand or follow verbal instructions. They may also have mobility issues or be completely immobile, and they may struggle with urinary and fecal control. These students are unable to meet their basic needs and require continuous support and care. It is worth noting that mental retardation can be caused by various pathological abnormalities affecting the brain during both the natal and postnatal periods[3].

**Research methodology.** Mental retardation can be caused by endogenous effects, developmental pathologies, or exogenous factors that affect the body externally. Exogenous causes include maternal infections, birth trauma, and fetal hypoxia. Students with mental retardation face difficulties in mental development due to weak and inhibitory processes, slow formation of conditional connections, and violation of the interaction of the first and second signaling systems. The defeat of the central nervous system leads to intellectual disabilities and affects all aspects of mental development, making it difficult for the child to acquire social and cultural skills. The primary issues in the mental development of the child's body are the under development of higher mental functions and a decrease in cognitive interests.

Students with mild mental retardation exhibit a diverse range of mental processes, albeit of high quality. Sensory perception is relatively stable, but can be limited, leading to inaccurate and weak differentiation of various sensations. This can make it challenging for students to navigate their environment. However, such limitations do not negatively impact their overall development. Special remedial classes and extracurricular activities that emphasize

practical significance can improve the quality of perception and feelings, and positively impact the development of complicated mental operations. Students with mental retardation may struggle with verbal and logical thought, generalization, and understanding the meaning of objects or phenomena. They may also exhibit weak thinking activity and a lack of planning in their work.

**Analysis and results.** The teaching of literacy highlights the challenges faced by students with mental retardation in their cognitive development. These individuals may possess the ability to read but struggle to comprehend the content. They find it difficult to draw conclusions from their reading, resulting in a fragmented and incomplete understanding. Identifying and correcting mistakes is also a challenge for them, as they often lack awareness of their errors. Their learning process becomes unconscious and mechanical, lacking depth and understanding. Additionally, their memory is characterized by poor retention and recall of essential information. They tend to remember insignificant details rather than the main concepts, and their knowledge requires constant repetition for reinforcement. While they may excel in mechanical memory, their ability to grasp logical reasoning is limited. The difficulties extend beyond acquiring and retaining knowledge, as they struggle to demonstrate their understanding. Their presentations may lack structure, contain inaccuracies, and be incomplete or concise. Attention-related issues further compound their cognitive challenges, with limited capacity, instability, and difficulties in focusing and shifting attention during educational activities.

Spelling proficiency is a combination of automated spelling actions performed by students. The foundation of each spelling proficiency is comprised of fundamental knowledge and language skills, including phonetics, word formation, morphology, and syntax. Two types of spelling proficiencies are identified based on the nature of orthograms: the skill for spelling roots, prefixes, and suffixes is formed against the backdrop of the phonetic-

verbal foundation, while the skill for spelling endings is formed at the morphological and syntactic levels. M.R. Levov, the teacher, discussed the stages of spelling proficiency development.

**Conclusion.** In summary, spelling proficiency is a comprehensive and intricate phenomenon that encompasses cognitive, linguistic, and developmental dimensions. The investigation of spelling skills has significantly contributed to our knowledge of language processing, the acquisition of literacy, and the functioning of the brain, offering valuable insights into the complexities of accurately encoding words. By recognizing spelling skills as a scientific phenomenon, researchers, educators, and practitioners can harness interdisciplinary knowledge to advance our understanding of spelling proficiency and its implications for education and cognitive science.

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