

¿Cómo pueden los principios neuro pedagógicos contribuir al rendimiento académico y al desarrollo más amplio de los estudiantes, especialmente durante la adolescencia? Una revisión crítica de los enfoques cognitivos, emocionales, sociales y contextuales

How can neuropedagogical principles contribute to students' academic performance and broader development, particularly during adolescence? A critical review of cognitive, emotional, social, and contextual approaches

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Artículo de Investigación Científica y Tecnológica

Enviado: 12/05/2026

Revisado: 15/06/2026

Aceptado: 10/07/2026

Publicado: 31/08/2026

DOI: <https://doi.org/10.33262/exploradordigital.v10i3.3758>

Cítese:

Flores Núñez, R. D. (2026). ¿Cómo pueden los principios neuro pedagógicos contribuir al rendimiento académico y al desarrollo más amplio de los estudiantes, especialmente durante la adolescencia? Una revisión crítica de los enfoques cognitivos, emocionales, sociales y contextuales. Explorador Digital, 10(3), 254-267. <https://doi.org/10.33262/exploradordigital.v10i3.3758>



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La revista es editada por la Editorial Ciencia Digital (Editorial de prestigio registrada en la Cámara Ecuatoriana de Libro con No de Afiliación 663) www.celibro.org.ec



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Palabras claves:

neuropedagogía,
neuroeducación,
neurodidáctica,
aprendizaje
basado en el
cerebro,
neuroplasticidad,
aprendizaje
adolescente,
metacognición,
inteligencia
emocional,
educación STEM,
compromiso del
estudiante.

Resumen

Introducción: la neuropedagogía surgió como un enfoque interdisciplinar que busca conectar la neurociencia, la psicología cognitiva y la teoría educativa con la práctica en el aula. **Objetivos:** esta revisión sintetiza literatura reciente y fundamental que examina cómo las pedagogías informadas por neurociencia pueden influir en el rendimiento académico, la metacognición, la motivación, la regulación emocional, la capacidad de los estudiantes de tomar un rol activo y significativo, la resolución de problemas y el compromiso. **Metodología:** se revisaron doce fuentes identificables publicadas entre 2020 y 2026, incluyendo artículos teóricos, marcos conceptuales, estudios cuasi-experimentales, investigación de métodos mixtos e intervenciones en el aula. En toda la literatura, se identificaron cinco dimensiones recurrentes de la práctica neuropedagógica: (a) procesos cognitivos y neuroplasticidad, (b) metacognición y autonomía del aprendiz, (c) aprendizaje emocional y social, (d) aprendizaje activo y contextualizado, y (e) instrucción individualizada y respaldada por tecnología. **Resultados:** los estudios empíricos generalmente informan resultados positivos asociados a enfoques informados por neurociencia, incluyendo mejoras en el rendimiento académico, competencia comunicativa, rendimiento técnico, función ejecutiva, inteligencia emocional y el rol activo del estudiante. Evidencia particularmente relevante proviene de contextos de secundaria, incluyendo un estudio cuasi-experimental de siete meses realizado con estudiantes del bachillerato ecuatoriano que reportó un gran efecto de la instrucción neurodidáctica en la competencia comunicativa en inglés. Sin embargo, la literatura también presenta importantes limitaciones metodológicas, incluyendo muestras pequeñas, intervenciones heterogéneas, dependencia de evidencia cualitativa o autoinformada, y la persistencia de una brecha de traducción entre los hallazgos neurocientíficos y la práctica educativa. **Conclusiones:** en general, la neuropedagogía parece prometedora cuando se entiende no como un conjunto de técnicas "basadas en el cerebro", sino como un enfoque estructurado para diseñar entornos de aprendizaje emocionalmente solidarios, cognitivamente desafiantes, activos, significativos y socialmente conectados. Se requiere una investigación longitudinal y controlada adicional para establecer mecanismos causales y determinar qué estrategias neuropedagógicas son más eficaces para

los adolescentes. **Área general de estudio:** Neurociencias. **Área específica de estudio:** Neuropedagogía. **Tipo de artículo:** Artículo de revisión

Keywords:

neuropedagogy,
neuroeducation,
neurodidactics,
brain-based
learning,
neuroplasticity,
adolescent
learning,
metacognition,
emotional
intelligence,
STEM education,
student
engagement

Abstract

Introduction: neuropedagogy has emerged as an interdisciplinary approach seeking to connect neuroscience, cognitive psychology, and educational theory with classroom practice. **Objectives:** this review synthesizes recent and foundational literature examining how neuroscience-informed pedagogies may influence academic performance, metacognition, motivation, emotional regulation, student agency, problem solving, and engagement. **Methodology:** twelve identifiable sources published between 2020 and 2026 were reviewed, including theoretical papers, conceptual frameworks, quasi-experimental studies, mixed-methods research, and classroom interventions. Across the literature, five recurrent dimensions of neuropedagogical practice were identified: (a) cognitive processes and neuroplasticity, (b) metacognition and learner autonomy, (c) emotional and social learning, (d) active and contextualized learning, and (e) individualized and technology-supported instruction. **Results:** empirical studies report positive outcomes associated with neuroscience-informed approaches, including improvements in academic achievement, communicative competence, technical performance, executive functioning, emotional intelligence, and student agency. Particularly relevant evidence comes from high-school contexts, including a seven-month quasi-experimental study conducted with Ecuadorian Baccalaureate students that reported a large effect of neurodidactic instruction on English communicative competence. However, the literature also presents important methodological limitations, including small samples, heterogeneous interventions, reliance on qualitative or self-reported evidence, and the persistence of a translation gap between neuroscientific findings and educational practice. **Conclusions:** overall, neuropedagogy appears promising when understood not as a collection of “brain-based” techniques but as a structured approach to designing emotionally supportive, cognitively challenging, active, meaningful, and socially connected learning environments. Further longitudinal and controlled research is required to establish causal mechanisms and determine which neuropedagogical strategies are most effective for adolescent

learners. **General Area of Study:** Neuroscience. **Specific area of study:** Neuropedagogy. **Type of article:** Review article.

1. Introduction

Education has traditionally been conceptualized primarily as the transmission of knowledge from teacher to student. Contemporary research in neuroscience, however, has increasingly emphasized that learning is a complex process involving cognitive, emotional, social, behavioral, and biological mechanisms. Neuropedagogy has emerged within this context as an attempt to establish a systematic relationship between knowledge about the brain and educational practice. Rather than treating neuroscience as a source of isolated facts about learning, neuropedagogy seeks to translate principles concerning neural processing, plasticity, attention, memory, emotion, and executive functioning into pedagogical decisions (Friedman et al., 2026).

Goldberg (2022) argues that neuroscience can contribute to education by increasing understanding of neuroplasticity and brain development and by helping students and educators recognize learning as a dynamic process. From this perspective, educational experiences do not simply transmit information; they participate in the development and modification of cognitive capacities. Friedman et al. (2026) develop this argument further by conceptualizing teachers as “neural architects” and proposing the Neuroscience-Informed Educational Strategies (NIES) model. Their framework establishes a four-stage process: identifying neural principles, identifying relevant brain-function attributes, establishing pedagogical orientations, and developing specific instructional strategies. This approach attempts to reduce the risk of applying neuroscience superficially or translating laboratory findings directly into classroom prescriptions without pedagogical mediation.

The literature also indicates that learning cannot be separated from emotional and social experience. Fanta (2023) through the Emotional, Social, and Cognitive Intelligent Teaching/Thinking (ESCIT) framework, emphasizes empathy, fairness, belonging, positive classroom climates, and the integration of cognitive, emotional, and social dimensions of teaching. Similarly, Asadova (2025) reports positive effects of an emotional-intelligence development program on emotional management, empathy, self-reflection, and interpersonal interaction in STEM-related educational and professional contexts.

The relationship between neuroscience-informed teaching and student performance has also received increasing empirical attention. Cherrier et al. (2020) examined the NeuroStratE intervention among high-school students and reported effects related to academic achievement, self-knowledge, and learner autonomy. More recent studies have examined neuropedagogy in chemistry, English-language learning, technical education,

mathematics, inclusive education, and general teaching practice (Borboeva et al., 2025; Loli et al., 2026; Rap et al., 2025; Rusydiana, 2023).

This review therefore synthesizes the available literature around a central question: “*How can neuropedagogical principles contribute to students' academic performance and broader development, particularly during adolescence?*” Attention is given to the mechanisms through which neuropedagogy may influence learning, the pedagogical strategies supported by literature, empirical evidence of effectiveness, and the limitations that must be considered when interpreting current findings.

2. Method

This review employed a narrative literature-review approach. The collection consisted of scholarly articles, theoretical papers, conference material, and empirical studies supplied by the researcher through direct links. The literature was examined for relevance to neuropedagogy, neuroeducation, neurodidactics, brain-based learning, adolescent education, cognitive development, emotional learning, STEM education, and classroom performance.

The identified literature included publications from 2020 to 2026 and represented diverse methodological approaches. These included theoretical and hypothesis papers, conceptual frameworks, quasi-experimental studies, mixed-methods research, qualitative evaluations, and intervention studies. The sources were subsequently organized thematically according to the principal mechanisms and educational outcomes discussed. The synthesis focused on five analytical categories: (1) cognitive development and neuroplasticity; (2) metacognition, self-regulation, and autonomy; (3) emotional and social processes; (4) active, contextualized, and experiential learning; and (5) technology, differentiation, and inclusive education. The purpose was not to calculate a pooled effect size but to identify convergent findings, contradictions, methodological limitations, and implications for educational practice.

3. Results

After reviewing the available literature, it appears that students may be able to improve their learning by having a more active role in class, a positive class environment and connecting complex concepts to daily-life issues. Some of the major findings are discussed in more detail below:

3.1. Neuropedagogy as an interdisciplinary framework

A consistent finding across the conceptual literature is that neuropedagogy is inherently interdisciplinary. Friedman et al. (2026) explicitly position neuropedagogy at the intersection of neuroscience, cognitive psychology, and educational theory. Their NIES model attempts to establish a transparent pathway between neural principles and classroom practice rather than treating neuroscience as a direct instructional manual.

Goldberg (2022) similarly presents neuroscience as an educational resource capable of informing understanding of neuroplasticity, brain development, attention, motivation, and learning. The implication is that education should recognize students as developing biological and cognitive systems rather than treating learning as an exclusive behavioral phenomenon.

Denervaud & Slováček (2025) extend this perspective by contrasting conventional information delivery with brain-based learning. Their discussion of Montessori education emphasizes self-directed activity, calibrated feedback, purposeful movement, peer interaction, sensory engagement, and opportunities for exploration. These practices are presented as compatible with contemporary understanding of attention, memory, self-regulation, creativity, social cognition, and neuroplasticity.

Together, these studies suggest that neuropedagogy is better understood as a design philosophy for learning environments than as a single teaching method.

3.2. Cognitive development, metacognition, and learner autonomy

One of the clearest mechanisms connecting neuroscience and educational performance is metacognition. Cherrier et al. (2020) investigated the NeuroStratE intervention among high-school students, explicitly combining neuroscience knowledge with a metacognitive approach. Their findings suggest that neuroscience-informed instruction can contribute to academic performance while simultaneously supporting students' self-knowledge and autonomy.

This finding is important because it changes the role of the student. Instead of depending exclusively on teachers to regulate learning, students can develop greater awareness of how attention, memory, strategies, and cognitive effort influence their performance. Neuroeducation therefore has the potential to transform students from passive recipients into more autonomous learners.

Friedman et al. (2026) similarly emphasizes the importance of understanding learning as a process involving neural reorganization. Their NIES model includes repetition, emotional engagement, and appropriate time for neural integration as principles that can inform instructional design.

The evidence from technical education further supports this cognitive dimension. Loli et al. (2026) found that students exposed to the Brain Matters approach demonstrated stronger performance in cognitive-technical knowledge, procedural execution, and problem solving. Although this population consisted of students in technical higher education rather than adolescents, the study indicates that neuroscience-informed teaching may support the integration of conceptual and procedural knowledge.

3.3. Emotion, motivation, and social learning

A second major theme is the integration of emotion and cognition. Neuropedagogical perspectives challenge the assumption that learning is primarily intellectual and independent of emotional states.

Fanta's (2023) ESCIT framework places emotional, social, and cognitive processes at the center of effective teaching. The framework emphasizes empathy, fairness, belonging, positive classroom climates, and a relaxed atmosphere. In this model, the teacher's interpersonal behavior is not peripheral to instruction; it forms part of the conditions that facilitate learning.

Friedman et al. (2026) similarly identify the integration of emotion and cognition as one of the central principles of neuropedagogy. Their formulation emphasizes that learning is influenced by emotional as well as cognitive processes.

Empirical evidence is also provided by Asadova (2025) whose study of an emotional-intelligence development program involving 200 participants reported improvements in emotional management, empathy, self-reflection, and interpersonal interaction. Although the study encompasses students and professional participants rather than a strictly adolescent sample, it reinforces the argument that emotional competence can be intentionally developed through educational experiences.

Rusydiana (2023) provides another example by combining Quantum Teaching with neuropedagogy. The study emphasizes social, emotional, and cognitive elements and reports improvements in learning outcomes. Thus, across different educational contexts, literature converges on the principle that motivation, emotion, social interaction, and cognition should be treated as interconnected rather than independent components of learning.

3.4. Active and contextualized learning

Literature also consistently supports a movement away from passive information delivery toward active and meaningful learning.

Rap et al. (2025) provides a particularly relevant example in chemistry education. Their intervention contextualized nano chemistry within public health and the COVID-19 pandemic. Students in Grades 10–12 were interviewed 8–12 months after the intervention. Students demonstrated retention of chemical concepts and were able to explain mechanisms associated with viral infection and mask functionality. Some students also shifted from viewing masks primarily as compliance toward understanding its scientific rationale and sharing this knowledge with others. These findings suggest that contextualization can connect conceptual learning with personal meaning and student agency.

This is particularly important for STEM education. Abstract scientific concepts may become more meaningful when connected to authentic problems, social issues, or situations students recognize from everyday life. In this sense, neuropedagogy can support not only the acquisition of knowledge but also the transfer of knowledge to real-world decision making.

Denervaud & Slováček (2025) similarly emphasize exploration, movement, multisensory engagement, feedback, and meaningful experiences. Their argument suggests that

students learn more effectively when they interact with information rather than simply receiving it.

3.5. *Neurodidactics and adolescent academic performance*

Among the studies reviewed, the research by Hernández et al. (2026) provides especially relevant evidence because it was conducted with first-year Baccalaureate students in Ecuador. The researchers implemented six neurodidactic strategies over seven months with an experimental group of 44 students and compared their performance with a control group of 44 students receiving conventional instruction.

The experimental group demonstrated a mean improvement of 5.35 points compared with 1.22 points in the control group. The difference was statistically significant, $t(86) = 6.19$, $p < .001$, with a large effect size ($d = 1.32$) and a η^2 value of .318. Improvements occurred across all five assessed dimensions of English communicative competence (Hernández et al., 2026).

This study is particularly significant for the present review because it provides evidence from the Ecuadorian secondary-school context. It also demonstrates that neurodidactic teaching can be operationalized through specific classroom strategies rather than remaining at the theoretical level.

3.6. *Technology, visualization, and active cognitive processing*

Borboeva et al. (2025) examined interactive learning technologies and spatial thinking in mathematics. Their study involved 132 mathematics students and integrated interactive tools such as 3D modeling and simulations with conventional geometry activities. The findings indicated improvements in visualization, spatial reasoning, and problem-solving abilities.

Although this study does not constitute a neuropedagogical intervention in the strict sense, it provides supporting evidence for pedagogical mechanisms emphasized by neuropedagogy. Interactive environments can require students to manipulate information, visualize relationships, evaluate hypotheses, and receive feedback. Consequently, technology may become neuropedagogically relevant when it is used to stimulate active cognitive processing rather than simply to digitize traditional instruction.

3.7. *Individual differences and inclusive education*

Neuropedagogy also has implications for differentiated and inclusive education. Erviana et al. (2026) integrated cognitive behavioral therapy and neuropedagogical strategies to support elementary students with ADHD. Although the participants were younger than adolescents, the study provides evidence concerning attention regulation, executive functioning, task persistence, impulse control, and classroom participation.

The intervention involved 18 students, with 10 receiving the intervention and 8 serving as a comparison group. Across 12 sessions, the intervention group demonstrated larger improvements in attention and executive functioning than the comparison group. These findings suggest that neuroscience-informed approaches may be particularly useful when instructional environments are adapted to students' cognitive and behavioral needs.

This supports a broader principle: neuropedagogy should not imply that every learner receives identical instruction. Instead, knowledge about cognition and self-regulation can help teachers design flexible environments that provide appropriate scaffolding while maintaining common academic goals.

4. Discussion

The synthesis reveals substantial convergence across literature. Despite differences in terminology neuropedagogy, neuro-education, neurodidactics, brain-based learning, and neuroscience-informed education, the reviewed studies reject a purely transmissive model of teaching.

The first major conclusion is that neuropedagogy is multidimensional. Cognitive processes such as attention, memory, metacognition, executive functioning, and problem solving interact with emotional processes such as motivation and emotional regulation and social processes such as empathy, collaboration, and belonging. Fanta (2023), Goldberg (2022), Friedman et al. (2026), and Asadova (2025) all contribute to this broader conceptualization.

Second, the evidence suggests that active learning is a central mechanism through which neuropedagogical principles may influence performance. The most promising interventions do not simply provide students with information about the brain. Instead, they change what students do: they retrieve information, manipulate representations, solve authentic problems, collaborate, reflect, practice, receive feedback, and connect new knowledge to meaningful experiences (Borboeva et al., 2025; Denervaud & Slováček, 2025; Rap et al., 2025).

Third, metacognition and learner autonomy appear to be particularly important mechanisms. Cherrier et al. (2020) demonstrate the relevance of combining neuroscience with metacognitive instruction, while Rap et al. (2025) demonstrate how contextualized science education can support student agency. These findings suggest that the long-term value of neuroeducation may extend beyond immediate test performance. Students may become more capable of understanding, monitoring, and regulating their own learning.

Fourth, the literature indicates that context matters. The strongest classroom examples are not necessarily those using the most sophisticated neuroscience or technology. Rather, successful interventions connect learning to meaningful contexts. Rap et al. (2025) for example, used nanochemistry and public health; Hernández et al. (2026) integrated neurodidactic strategies into foreign-language learning; and Borboeva et al. (2025) used interactive representations to address spatial reasoning.

Fifth, the evidence has important implications for adolescent education. Adolescence represents a developmental period characterized by continuing changes in executive functioning, self-regulation, social cognition, and identity formation. Consequently, educational environments that combine cognitive challenge with emotional safety, autonomy, meaningful interaction, and opportunities for reflection may be particularly

valuable. The evidence from Cherrier et al. (2020), Rap et al. (2025), and Hernández et al. (2026) provides direct support for this proposition.

Nevertheless, several limitations must be emphasized. First, the studies differ considerably in methodology. Some are theoretical or conceptual (Denervaud & Slováček, 2025; Friedman et al., 2026), whereas others are quasi-experimental or intervention based. Therefore, it would be inappropriate to treat all evidence as equivalent.

Second, some empirical studies rely on small samples. Rap et al. (2025) for example, evaluated the long-term outcomes of their chemistry intervention through interviews with six students. Erviana et al. (2026) included 18 students. Such studies provide valuable qualitative and exploratory evidence but cannot independently establish generalizable causal effects.

Third, the field continues to face a translation problem between neuroscience and education. Friedman et al. (2026) explicitly acknowledge that direct movement from neural mechanisms to classroom prescriptions can be problematic. Brain research operates at a different level of analysis from classroom behavior, and educational outcomes are influenced by numerous variables beyond neural mechanisms. Consequently, neuroscience should not replace psychological, pedagogical, and educational research.

Fourth, the term “neuroeducation” can encompass interventions of quite different scientific quality. Some approaches may be strongly grounded in established research, whereas others may use neuroscience terminology without adequate empirical support. The NIES model proposed by Friedman et al. (2026) is valuable precisely because it attempts to make the reasoning from scientific principle to pedagogical practice explicit. Finally, more research is needed specifically with secondary-school adolescents. Although the literature contains promising studies with high-school students, university students, elementary students, and professional populations, comparatively fewer rigorous longitudinal studies examine adolescent learners across different academic subjects. The Ecuadorian study by Hernández et al. (2026) is therefore particularly important and represents a useful model for future research in the region.

5. Conclusion

- The reviewed literature suggests that neuropedagogy has considerable potential as an educational framework when it is understood as the systematic integration of neuroscience, cognitive psychology, emotional development, social learning, and evidence-based pedagogy. The evidence does not support the simplistic idea that neuroscience alone can provide direct solutions to classroom problems. Rather, it indicates that knowledge about learning and brain development can inform the design of more effective learning environments.

- Across the reviewed studies, several principles emerge consistently. Effective neuropedagogical environments should promote active engagement, meaningful contextualization, metacognition, repetition and retrieval, emotional safety, social interaction, autonomy, feedback, problem solving, and appropriate cognitive challenge. These principles can be implemented through strategies such as collaborative learning, contextualized STEM problems, gamification, multisensory instruction, simulations, interactive technologies, reflective activities, retrieval practice, and structured scaffolding.
- The literature also suggests that the potential value of neuropedagogy extends beyond academic achievement. Neuro-informed learning environments may support student agency, emotional regulation, learner autonomy, critical thinking, problem solving, social competence, and lifelong learning. This broader perspective is especially relevant to adolescent education, where cognitive and socio-emotional development occur simultaneously.
- However, neuropedagogy remains an emerging field and requires stronger empirical foundations. Future research should employ larger samples, longitudinal designs, randomized or well-controlled quasi-experimental studies, validated measures, and cross-cultural comparisons. Research should also distinguish clearly between interventions supported by robust neuroscience and practices that merely use neuroscientific terminology.
- Overall, the literature supports a cautious but optimistic conclusion: neuropedagogy is most promising not when it attempts to turn neuroscience into a collection of classroom “tricks,” but when it uses scientifically informed principles to help teachers create learning environments in which students actively think, feel, interact, reflect, practice, and construct meaningful knowledge. For adolescent education, particularly STEM and language learning, this approach provides a potentially powerful framework for connecting academic performance with the broader cognitive, emotional, and social development of the learner.

6. Conflict of interest

The authors declare that there is no conflict of interest in relation to the article presented.

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8. Authors' Contribution Statement

The authors declare that they have participated equally and substantially in the conduct of this research, under the responsibilities under the [CRediT Taxonomy](#) to describe the individual contributions of each author to the work.

Roberto David Flores Núñez carried out the conceptualization of the research, organization and execution of the essay, collection and curation of the data, review of the statistical analysis, interpretation of the results, preparation of the original draft, preparation of tables and figures, critical review of the content and approval of the final version of the manuscript.

Disclosure of delegation to generative AI

The authors declare that they used ChatGPT (OpenAI, GPT-5.5) as a support tool to reorganize and editorially reformulate the original manuscript, correct the style, translate the abstract into English, and check formal compliance with the journal's format. The experimental data, design, statistical results, and scientific decisions come from the authors' research and were not generated or modified by the tool. The authors reviewed, contrasted, and approved each section and assumed full responsibility for the final content. The tool is not listed as an author and assumes no responsibility for the results.

Statement submitted by: Roberto David Flores Núñez

9. Financing costs

This research was funded entirely with the authors' own funds.

10. References

- Asadova, N. (2025). Organisation of emotional intelligence development programme in the educational process and professional activities in STEM fields. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, 9(2), 676–694.
<https://doi.org/10.22437/jiituj.v9i2.40350>
- Borboeva, G., Sooronbaeva, K., Kalbekova, M., Seiitkazyeva, G., & Sarygulova, N. (2025). Evaluating the effectiveness of interactive learning technologies in enhancing spatial thinking among mathematics students. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, 9(3), 981–994.
<https://doi.org/10.22437/jiituj.v9i3.42557>
- Cherrier, S., Le Roux, P.-Y., Gerard, F.-M., Wattelez, G., & Galy, O. (2020). Impact of a neuroscience intervention (NeuroStratE) on the school performance of high school students: Academic achievement, self-knowledge and autonomy through a metacognitive approach. *Trends in Neuroscience and Education*, 18, 100125.
<https://doi.org/10.1016/j.tine.2020.100125>
- Denervaud, S., & Slováček, M. (2025). From information delivery to brain-based learning. *Institutio Infantium*, 2(2), 70–81. <https://doi.org/10.5281/zenodo.17428818>
- Erviana, N., Haenilah, E. Y., Abdurrahman, A., & Maulina, D. (2026). Integrating cognitive behavioral therapy and neuropedagogy to support ADHD in inclusive

- elementary education. *Tadris: Jurnal Keguruan dan Ilmu Tarbiyah*, 11(2), 694–704.
<https://doi.org/10.24042/tadris.v11i2.30201>.
<https://ejournal.radenintan.ac.id/index.php/tadris/article/view/30201>
- Fanta, H. (2023, February 8). *The 7 principles of emotional/social & cognitive intelligent teaching/thinking = ESCIT–neuro-pedagogy: Preamble taking the current time into account* [Conference presentation, 6th International Scientific Conference “Cross-Cultural Communication and Translation Studies: Common Issues and Development Prospects,” Hryhorii Skovoroda University in Pereiaslav, Ukraine]. https://www.researchgate.net/publication/378125352_T
- Friedman, I. A., Grobgeld, E., & Teichman-Weinberg, A. (2026). Neuropedagogy: from neurons to teaching and learning. *Frontiers in Education*, 11, 1774900.
<https://doi.org/10.3389/feduc.2026.1774900>
- Goldberg, H. (2022). Growing brains, nurturing minds—Neuroscience as an educational tool to support students' development as life-long learners. *Brain Sciences*, 12(12), 1622. <https://doi.org/10.3390/brainsci12121622>
- Hernández Cueva, E. J., Espín Lumbano, J. E., Rojas Pérez, C. E., Gutiérrez Sánchez, M. G., Idrobo Gutiérrez, M. A., Hernández Cueva, A. A., & Ortega Villamagua, V. N. (2026). Neurodidactic strategies for English as a foreign language learning in first-year baccalaureate students: a quasi-experimental study. *Riceso - Revista Interdisciplinaria de Ciencias de la Educación, Salud y Sociología*, 1(2), 213–231.
<https://doi.org/10.66136/va881h39>
- Loli Quincho, M. J., Borja Peinado, B., Yauri Janto, E., & Poves Sihuay, J. J. (2026). Neuroeducational influence of Brain Matters on the technical intelligence of university students at a Peruvian public institute. *International Journal of Special Education*, 41(8s), 739–756.
<https://internationalsped.com/index.php/ijse/article/download/3450/727>
- Rap, S., Blonder, R., Bodas, M., & Marchak, D. (2025). Can chemistry knowledge influence student behavior? A neuropedagogy-based intervention as good practice to address cognitive and affective learning factors. *Chemistry Teacher International*, 7(4), 633–646. <https://doi.org/10.1515/cti-2025-0014>
- Rusydiana, I. (2023). Enhancing learning outcomes through neuropedagogy-based Quantum Teaching. *Journal of Education and Religious Studies*, 3(3).
<https://doi.org/10.57060/jers.v3i03.120>.
<https://journal.academiapublication.com/index.php/jers/article/download/120/88>

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