

PLAYFULNESS AND TEACHING CHILDREN WITH ADHD: A SYSTEMATIC REVIEW OF SCIENTIFIC EVIDENCE AND INCLUSIVE PEDAGOGICAL PRACTICES

A LUDICIDADE E O ENSINO DE CRIANÇAS COM TDAH: UMA REVISÃO SISTEMÁTICA DE EVIDÊNCIAS CIENTÍFICAS E PRÁTICAS PEDAGÓGICAS INCLUSIVAS

Ana Lúcia de Souza Almeida¹

RESUMO: O Transtorno do Déficit de Atenção e Hiperatividade (TDAH) representa um dos desafios mais recorrentes no cotidiano escolar contemporâneo, impactando diretamente o desempenho acadêmico, a regulação atencional e a socialização das crianças. Este artigo tem como objetivo analisar de forma sistemática as evidências científicas recentes acerca do impacto e da eficácia do uso da ludicidade e de práticas pedagógicas baseadas em evidências no ensino de alunos com TDAH. Metodologicamente, estruturou-se uma revisão integrativa fundamentada em bases acadêmicas e ancorada em cinco produções de referência publicadas no período de 2021 a 2026. A amostragem contemplou investigações sobre percepções docentes na escola pública, o uso de jogos no ensino de matemática, estratégias comportamentais e panoramas gerais das pesquisas acadêmicas sobre o transtorno. Os resultados evidenciam que a incorporação de recursos lúdicos reduz a desatenção motora, promove a motivação intrínseca e melhora o clima em sala de aula, embora ainda existam barreiras estruturais significativas e lacunas na formação continuada dos professores. Conclui-se que a ludicidade não deve ser encarada como mero passatempo, mas como uma ferramenta neuropedagógica indispensável para a efetivação da inclusão escolar.

Palavras-chave: TDAH. Ludicidade. Jogos Educativos. Inclusão Educacional. Práticas Pedagógicas.

¹ Mestranda pela Universidad Autonoma de Asunción - UAA.

ABSTRACT: Attention Deficit Hyperactivity Disorder (ADHD) represents one of the most recurrent challenges in contemporary school life, directly impacting academic performance, attentional regulation, and children's socialization. This article aims to systematically analyze recent scientific evidence regarding the impact and effectiveness of using playfulness and evidence-based pedagogical practices in teaching students with ADHD. Methodologically, an integrative review was structured based on academic databases and anchored in five benchmark productions published between 2021 and 2026. The sampling included investigations into teacher perceptions in public schools, the use of games in mathematics teaching, behavioral strategies, and general overviews of academic research on the disorder. The results show that the incorporation of playful resources reduces motor inattention, promotes intrinsic motivation, and improves classroom climate, although significant structural barriers and gaps in ongoing teacher training still persist. It is concluded that playfulness should not be viewed as a mere pastime, but as an indispensable neuro-pedagogical tool for the realization of school inclusion.

Keywords: ADHD. Playfulness. Educational Games. Educational Inclusion. Pedagogical Practices.

1. INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by persistent levels of inattention, hyperactivity, and impulsivity that interfere with the child's school and social functioning or development. In the Brazilian educational context, the insertion and permanence of students diagnosed with ADHD are one of the greatest tests for the adaptive capacity of educational institutions, especially the public network.

The traditional teaching model — strongly based on prolonged oral exposure, student passivity and the requirement of strict motor control — clashes head-on with the neurobiological profile of students with ADHD. In view of this mismatch, the search for active methodologies and, in particular, playfulness has gained central prominence in recent scientific discussions. Games, interactive dynamics, manipulable materials and playful approaches emerge not only as recreational elements, but as neuropedagogical tools capable of modulating

attention, channeling motor energy and optimizing the acquisition of complex curricular content.

1.1 Research Problem

In view of this panorama, the present study revolves around the following research problem: How do playfulness and evidence-based pedagogical strategies contribute to the improvement of the teaching-learning process and to the educational inclusion of children with ADHD, according to recent scientific literature?

1.2 Hypothesis

It is formulated as a central hypothesis that the structured integration of playful practices and educational games in the school environment significantly attenuates the attentional and behavioral deficits of students with ADHD, promoting superior cognitive and social engagement compared to traditional methods, as long as it is supported by adequate teacher training and institutional support.

1.3 Justification

The relevance of this research is justified by the urgency of transposing theoretical academic knowledge to the practical daily lives of teachers. Although there are numerous legal guidelines for inclusion, the teaching staff often reports pedagogical loneliness and a lack of applicable methodological guidelines. Synthesizing recent scientific evidence through a rigorous systematic review provides practical and theoretical subsidies for public policy makers, school administrators, and educators who seek to transform the classroom into a truly inclusive and stimulating environment.

1.4 Objectives

1.4.1 General Objective

To critically analyze, through a systematic review of recent literature (2021-2026), the impact and effectiveness of playfulness and evidence-based pedagogical practices in the teaching of children with ADHD.

1.4.2 Specific Objectives

1. Map the main teacher perceptions, challenges and barriers faced in public schools in relation to the inclusion of students with ADHD.
2. Examine the specific role of games and playfulness in the teaching of structured subjects, such as mathematics.
3. To identify evidence-based pedagogical strategies consolidated in recent integrative literature.
4. Produce comparative tables and graphs systematizing the type of research, approaches, sampling, and pedagogical tools identified in the reference studies.

2. THEORETICAL FOUNDATION: PLAYFULNESS AND NEUROPEDAGOGICAL MANAGEMENT IN ADHD

Introduction to neurodiversity and the concept of adhd in school

The contemporary understanding of Attention Deficit Hyperactivity Disorder (ADHD) has overcome the purely deficit and reductionist view, embracing the paradigm of neurodiversity. From this perspective, the atypical brain is not understood as defective, but as the bearer of natural variations in neurological development that imply different ways of processing stimuli, regulating attention, and modulating motor response.

In the school context, however, the traditional teaching structure — inherited from nineteenth-century industrial models — continues to require prolonged physical immobility, passive listening, and maintenance of sustained attentional focus for excessive periods. For students diagnosed with ADHD, whose executive functions associated with the prefrontal cortex present atypical maturation, these requirements configure insurmountable barriers. As pointed out by Macêdo et al. (2026), recent academic research demonstrates that the mismatch between the student's neurobiology and the rigidity of the school curriculum is the main root of academic failure and school dropout of atypical children.

Executive functions and attentional dysregulation

From a neuropsychological point of view, ADHD is primarily understood as a disorder of executive functions (EFs). EFs encompass the set of higher cognitive processes responsible for planning, inhibitory control, working memory, cognitive flexibility, and emotional regulation.

Children with ADHD experience severe difficulties in inhibitory control (the ability to rein in impulses and resist distractions) and working memory (retaining and manipulating information for short periods). In the classroom, this translates into the inability to stay focused on tasks that are considered monotonous or repetitive.

It is exactly at this point that the theoretical foundation meets playfulness. While traditional lectures require top-down attentional effort (voluntary and exhausting for the brain with ADHD), playful activities and games activate the dopaminergic reward system in a bottom-up way (through pleasurable and immediate external stimulus), engaging the student spontaneously and drastically reducing motor hyperactivity behaviors (Silva, 2023).

Playfulness as a neuropedagogical tool

Playfulness should not be reduced to a mere recreational resource or pastime to fill vacant schedules. From the perspective of modern neuropedagogy, the act of playing and interacting through structured games constitutes a universal language of cognitive and social development.

The Game as a Mediator of Learning

Based on the socio-interactionist theory, play acts on the Zone of Proximal Development (ZPD) described by Vygotsky, allowing the child to reach levels of problem-solving in cooperation and interaction that he would not reach alone. In the case of students with ADHD, the pedagogical game offers:

- **Structuring of Clear Rules:** The regulated format of the game trains inhibitory control in a playful way, teaching tolerance to frustration and waiting for one's turn.
- **Immediate Feedback:** Unlike a traditional test whose results take days, the game provides instant feedback on the action taken, keeping the brain engaged and curious.

Playfulness in Mathematics Teaching

One of the fields where ADHD generates the most anxiety and academic blocks is logical-mathematical reasoning. Dantas, Costa, and Carvalho (2023) demonstrate that the insertion of manipulable materials and mathematical board games transforms the abstract concept into something concrete and tangible. By manipulating pieces, counting points, and solving spatial challenges in a group, the student with ADHD channels motor energy into the cognitive task, dissolving the barrier of inattention.

The daily life of public schools: teachers' perceptions and challenges of inclusion

The implementation of playful and evidence-based practices comes up against a complex structural scenario, especially in public educational institutions. Miranda and Silva (2021) reveal in their research that public school teachers feel lonely and unprepared to deal with the behavioral management of students with ADHD.

Teaching Overload and Lack of Multidisciplinary Support

The main bottlenecks pointed out by the teaching literature include:

1. **Overcrowding of classrooms:** Makes it impossible to have individualized monitoring and constant mediation required by atypical students.
2. **Gap in initial and continuing education:** Undergraduate courses rarely offer in-depth courses on neurodiversity and neurodevelopmental disorders.
3. **Scarcity of pedagogical resources:** The absence of adapted materials and support from multiprofessional teams (psychologists, psychopedagogues, speech therapists) overwhelms the teacher, who often resorts to purely intuitive and informal adaptations.

Evidence-based pedagogical strategies (ebps)

In view of the challenges mentioned above, the integrative review literature systematized by João Batista da Silva (2023) and corroborated by Brito and Vale (2024) points to a set of interventions based on scientific evidence that obtain a high success rate in the school management of ADHD:

- **Environmental and Visual Modifications:** Reduction of excessive visual stimuli on the walls (visual pollution), positioning of the student near the teacher's desk and removal of windows with large external flow.
- **Chunking:** Breaking down long written activities into short, manageable steps, providing positive reinforcement with each completed step.
- **Use of Assistive Technology and Multimedia Resources:** Application of interactive educational software and tablets, which capture atypical attention through dynamic visual and auditory stimuli.
- **Token Economy and Positive Reinforcement Systems:** Setting short-term behavioral goals rewarded for playful privileges or points in the activity, reinforcing desired behavior at the expense of punishment.

An in-depth analysis of the recent literature (2021–2026) shows that the success of school inclusion of children with ADHD is not a pedagogical utopia, but a requirement that demands the articulation between neuroscientific knowledge and teaching practice. Playfulness emerges as the central axis of this transformation, humanizing the teaching process and respecting the singularities of child neurodevelopment. However, for playfulness to cease to be the exception and become the rule, it is imperative to invest in school infrastructure, multiprofessional support, and continuing teacher training.

7

3. METHODOLOGY

The present study is characterized as a systematic and integrative review of the literature, structured to gather, analyze and critically synthesize findings of scientific research published on the theme of playfulness and ADHD.

3.1 Sampling and Eligibility Criteria

The sampling was intentional and based on fundamental references from the recent academic literature (2021–2026). Five main axes of study published by authors of relevance in the Brazilian educational and neuroscientific area were selected:

- I. **Miranda & Silva (2021):** Focus on teacher perceptions and challenges of inclusion in public schools.

2. **Dantas, Costa & Carvalho (2023):** Focus on teaching mathematics through playfulness and games.
3. **Silva, J. B. (2023):** Focus on evidence-based pedagogical strategies (integrative review).
4. **Brito & Vale (2024):** Focus on educational practices and inclusion processes of students with ADHD.
5. **Macêdo et al. (2026):** Current overview of academic research on ADHD and pedagogical interventions.

3.2 Inclusion and Exclusion Criteria

- **Inclusion Criteria:**

- Scientific articles and reviews published between the years 2021 and 2026.
- Studies explicitly focused on the school context and pedagogical practices with children diagnosed with ADHD.
- Works that addressed playful methodologies, educational games or evidence-based curricular adaptations.

- **Exclusion Criteria:**

- Publications prior to 2021.
- Studies focused exclusively on pharmacological treatment without a pedagogical interface.
- Opinion pieces, editorials or articles without explicit methodological rigor.

3.3 Data Collection and Analysis Procedure

Data collection consisted of the systematic extraction of information from the selected texts, categorizing them into descriptive matrices. The analytical process followed the thematic content analysis technique, unfolding into:

1. Fluctuating and exhaustive reading of reference texts;

2. Categorization of data according to methodological approach, sample profile and main pedagogical tools identified;
3. Construction of comparative tables for crossing variables;
4. Critical interpretation of the results in the light of the literature on neurodiversity and inclusive education.

4. RESULTS AND DISCUSSION

The systematized analysis of the selected studies revealed a multifaceted panorama of the educational reality in the face of ADHD. Table 1 summarizes the main methodological characteristics and pedagogical tools mapped in the analyzed references.

Table 1: Comparative Matrix of Analyzed Studies on ADHD and Playfulness (2021–2026)

Author and Year	Type of Research	Approach	Sample / Context	Key Inclusive Tools and Practices
Miranda & Silva (2021)	Field Research / Case Study	Quali-quantitative	Teachers in the public school system	Questionnaires, semi-structured interviews, teacher listening and intuitive curricular adaptation.
Dantas, Costa & Carvalho (2023)	Interventional Research / Pedagogical Practice	Qualitative	Students with ADHD and Mathematics teachers	Pedagogical games, manipulable materials and playful didactic sequences.
Silva, João Batista (2023)	Integrative Literature Review	Qualitative (Review)	Consolidated scientific literature from indexed databases	Behavioral strategies, positive reinforcement, environmental adaptations and active methodologies.
Brito & Vale (2024)	Literature Review / State of the Art	Qualitative (Review)	Academic articles on inclusion and ADHD	Inclusive educational practices, continuing

				teacher training and assistive technologies.
Macêdo et al. (2026)	Bibliographic Review / Panoramic	Qualitative / Analytical	Recent academic research (contemporary panorama)	Mapping of diagnoses, pedagogical interventions and institutional barriers.

3.1 Analysis of Methodological Dimensions and Approaches

As shown in Table 1, the qualitative or qualitative-quantitative approach predominates in recent studies, reflecting the need to understand the complexity of the educational and behavioral phenomenon beyond purely quantitative metrics.

- **The Teaching Factor (Miranda & Silva, 2021; Brito & Vale, 2024):** Research shows that public school teachers face a double challenge: overcrowding in classrooms and the absence of specialized multidisciplinary support. Inclusive practices often emerge from the individual and intuitive effort of teachers, evidencing a structural gap in initial training.
- **The Effectiveness of Play in Specific Areas (Dantas, Costa & Carvalho, 2023):** In the teaching of abstract subjects such as Mathematics, the introduction of games and manipulable materials transforms the axis of the class. Play acts as a mediator of sustained attention, allowing the student with ADHD to process abstract concepts through concrete experimentation.
- **Scientific Evidence and Behavioral Management (Silva, 2023; Macêdo et al., 2026):** The most recent integrative reviews reinforce that successful pedagogical interventions combine positive reinforcement, visual structuring of the environment, and breaking down complex tasks into smaller, rewarding steps.

10

5. FINAL CONSIDERATIONS

The present systematic review showed that playfulness plays a fundamental neuropedagogical role in the teaching of children with ADHD. The initial hypothesis was fully confirmed: when the school environment replaces traditional rigidity with playful strategies,

structured games and positive reinforcement, a marked decrease in inattention behaviors and a significant increase in academic performance is observed.

However, the studies analyzed (Miranda & Silva, 2021; Dantas et al., 2023; Silva, 2023; Brito & Vale, 2024; Macêdo et al., 2026) demonstrate unanimity in pointing out that the success of inclusion does not depend only on the isolated creativity of the teacher, but on consistently structured public policies for continuing education, reduction in the number of students per class, and multiprofessional support in public schools.

It is recommended that future research investigate the longitudinal application of assistive technologies combined with playful games in order to measure long-term impacts on the self-esteem and autonomy of students with ADHD.

REFERENCES (ABNT STANDARD)

AMERICAN PSYCHIATRIC ASSOCIATION. Diagnostic and Statistical Manual of Mental Disorders: DSM-5. 5. ed. Porto Alegre: Artmed, 2014.

AMERICAN PSYCHIATRIC ASSOCIATION. **Diagnostic and statistical manual of mental disorders: DSM-5-TR**. Washington, DC: American Psychiatric Association Publishing, 2022.

AROMATARIS, Edoardo; MUNN, Zachary (ed.). **JBIManual for Evidence Synthesis**. Adelaide: Joanna Briggs Institute, 2020. Available at: <https://synthesismanual.jbi.global>. Accessed on: 20 jul. 2026.

11

BENEVIDES, Sandra Pacheco. 2020. Appropriation of addition and subtraction operations by a child with ADHD: experiences using the tablet. 96 f. Dissertation (Professional Master's Degree in Science, Technology and Education) – Vale do Cricaré College, São Mateus, 2020.

BOMBASSARO, Patrícia; TISSER, Luciana. Case report: Neuropsychological Rehabilitation of Attention Deficit/Hyperactivity Disorder. In: FONTOURA, Denise Ren da. et al. Theory and Practice in Neuropsychological Rehabilitation. São Paulo, Vetor Editora, 2017.

BORBA, Marcelo C.; VILLARREAL, Maria E. Histories of computers and other media in mathematics education. Belo Horizonte: Autentica, 2005.

BRITO, José Armando Marques de; VALE, Sandra Karina M. do. **Literature review on educational practices used in the process of inclusion of students with ADHD**. Revista Inclusão & Sociedade, v. 12, n. 2, p. 45-60, 2024.

DANTAS, Paulo Cardoso; COSTA, Ronaldo Campelo da; CARVALHO, Rui Marques. **Teaching mathematics with playfulness: teaching experiences and the use of games as a support for the learning of students with ADHD**. Educação Matemática em Revista, v. 28, n. 3, p. 112-128, 2023.

FERREIRA, João Carlos Pereira et al. **Accommodations, interventions and modifications in the classroom for university students with ADHD: a systematic review.** *Pedagogical Notebook*, 2024. DOI: 10.54033/cadpedv21n4-099.

GUIDI, Juliana Gomes et al. **Teaching tools to aid learning in children with ADHD: a literature review.** *Debates in Psychiatry*, v. 14, 2024. DOI: 10.25118/2763-9037.2024.v14.1113.

MACÊDO, Lourdes Christina dos Santos de et al. **Attention Deficit Hyperactivity Disorder: What academic research reveals.** *Scientia Generalis*, Patos de Minas, v. 7, n. 1, p. 95–114, 2026.

MIRANDA, Mirtes Soares Pessoa de; SILVA, José Igor Gonçalves da. **ADHD in public schools: teacher perceptions, pedagogical practices and challenges of educational inclusion.** *Scientific Journal of Inclusive Education*, v. 3, n. 2, p. 78–92, 2021.

MOURA, G. M.; RODRIGUES, R. V. R. **ADHD in the field of teaching: a systematic review of literature.** *Journal of Interdisciplinary Studies*, 2024. DOI: 10.56579/rei.v6i2.713.

PAGE, Matthew J. et al. **The PRISMA 2020 statement: an updated guideline for reporting systematic reviews.** *BMJ*, v. 372, n. 71, 2021. DOI: 10.1136/bmj.n71.

SANTOS, Suelen Pereira; SARDAGNA, Helena Venites. **Curricular accessibility and school inclusion: a literature review.** *Educere et Educare*, v. 18, n. 45, 2023. DOI: 10.48075/educare.v18i45.30639.

SILVA, Karina Labes da; SIGNOR, Rita de Cássia Fernandes; TONOCCHI, Rita. **Pedagogical practices for subjects diagnosed with ADHD: an integrative review.** *Ibero-American Journal of Studies in Education*, v. 18, esp. 1, 2023. DOI: 10.21723/riaee.v18iesp.1.18471.

SILVA, João Batista da. **Evidence-based pedagogical strategies for students with Attention-Deficit/Hyperactivity Disorder (ADHD): An integrative literature review.** *Cadernos de Educação Especial*, v. 36, p. 1–20, 202.

SOUZA, Marcela Tavares de; SILVA, Michelly Dias da; CARVALHO, Rachel de. **Integrative review: what it is and how to do it.** *Einstein*, São Paulo, v. 8, n. 1, p. 102–106, 2010.

WHITTEMORE, Robin; KNAFL, Kathleen. **The integrative review: updated methodology.** *Journal of Advanced Nursing*, v. 52, n. 5, p. 546–553, 2005. DOI: 10.1111/j.1365-2648.2005.03621. x.