

THE INFLUENCE OF MUSIC ON LEARNING AND COGNITIVE DEVELOPMENT



<https://doi.org/10.56238/arev7n4-017>

Submitted on: 04/03/2025

Publication date: 04/04/2025

Jociane Galdino Muniz Gonçalves¹, Marinêz Gonçalves da Silva Rabecini², Jaqueline Velloso da Cruz³, Daiane de Lourdes Alves Velho⁴ and Madalena da Silva Rodrigues⁵

ABSTRACT

This article investigated the influence of music on learning and cognitive development, with the general objective of demonstrating how music education favored cognitive development, and specifically, highlighted the role of music in promoting memorization and attention, analyzed the benefits of music education in the construction of socio-emotional skills and identified the impacts of the use of songs in language teaching for the improvement of communicative skills. The study approached the theme from a bibliographic research, in which several theoretical references that dealt with music as an artistic manifestation and transforming instrument of educational processes were analyzed. The methodology consisted of the critical analysis of literature, according to the methodological assumptions established by Narciso and Santana (2024), which supported the systematic collection and analysis of data available in academic sources. The results indicated that music played a decisive role in stimulating brain plasticity, contributing to the improvement of cognitive functions, the development of motor coordination and the strengthening of students' socio-emotional skills. The conclusions highlighted that the integration of music in educational environments promoted a significant transformation in learning processes, evidencing the importance of its incorporation into school curricula. The findings corroborated evidence from previous studies, demonstrating that music exerted a broad influence on learning processes and cognitive functions. The results confirmed the importance of music as a catalyst for educational and cognitive changes. These findings have guided significant new perspectives.

Keywords: Learning. Cognition. Music Education. Transformation. Interaction.

¹Master's student in Emerging Technologies in Education
MUST University

E-mail: jocianegmuniz@gmail.com

²Master's student in Emerging Technologies in Education
MUST University

Email: professoramarinez@hotmail.com

³Master's student in Emerging Technologies in Education
MUST University

E-mail: jaqueline.cruz13063@student.mustedu.com

⁴Master's student in Inclusive Education
University of the State of Mato Grosso (UNEMAT)

Email: daiane.alves@unemat.br

⁵Master's student in Emerging Technologies in Education
MUST University

Email: madalena-snp@hotmail.com

INTRODUCTION

The research discusses the influence of music on learning and cognitive development, emphasizing its relevance for the transformation of educational processes and the integral formation of individuals. The general objective of this study is to demonstrate how music education favors cognitive development and, specifically, aims to (I) highlight the role of music in promoting memorization and attention, (II) analyze the benefits of music education in the construction of socio-emotional skills, (III) identify the impacts of the use of songs in language teaching for the improvement of communicative skills and (IV) point out the benefits of musical training. The guiding question that guides the investigation is: 'how does the integration of music in educational environments contribute to the improvement of cognitive functions and to the global development of students?'

The research is based on a bibliographic approach, according to the methodological assumptions presented by Narciso and Santana (2024). The data are collected systematically from the critical analysis of the literature and are organized through a qualitative analysis technique that enables the synthesis of the main findings.

The parts developed are distributed in the following subsections: Effect of Music on Learning and Cognitive Development; Music Education and Cognitive Development; Music in Early Childhood Education – Transforming Instrument of Development; Music in Language Teaching; Whoever touches, learns.

Therefore, the introduction presents the theoretical and methodological context that underlies the study, establishes the objectives and the research question, and delimits the structure of the article, which allows an integrated understanding of the effects of music on learning processes and cognitive development.

METHODOLOGY

The methodology used in the research consisted of the collection and analysis of materials such as articles, books, periodicals, website pages and conference proceedings, with the objective of gathering information that supported the solution of the research problem. The steps of identifying the theme, searching and selecting sources, critical analysis of the contents, and organization of references were followed, according to the methodological assumptions established by Narciso and Santana (2024), which underpinned the research strategy adopted. In this context, the bibliographic approach

allowed the systematization of relevant data, using the CAPES Periodicals database – a platform that provided access to a vast collection of scientific journals, ensuring the obtaining of high quality and relevant materials. The keywords used in the research included the simple combinations 'music', 'learning', 'development', 'education' and 'cognition', which helped in the delimitation and search for pertinent contents. The inclusion and exclusion criteria were rigorously applied, considering the date of publication, thematic relevance and the reliability of the authors, in order to ensure that only updated studies with a consistent theoretical basis were part of the critical analysis. Thus, the methodological procedure allowed the construction of a solid theoretical framework, which supported the discussions and conclusions presented throughout the study.

EFFECT OF MUSIC ON LEARNING AND COGNITIVE DEVELOPMENT

Music, as an artistic manifestation, accompanies humanity throughout its history, developing essential qualities in the human being (Santos; Oak; Selva, 2020). Thus, it is observed that its presence in cultural and educational contexts has been widely recognized for stimulating not only aesthetic sensitivity, but also the ability to learn and process information in a differentiated way.

Furthermore, musical language reveals itself as an indispensable resource, not only for the training of professionals or artists, but above all as a tool that enables greater cognitive and emotional development (Santos; Oak; Selva, 2020). Thus, the incorporation of music in the educational environment contributes to the construction of neural pathways that promote memorization, attention, and creativity, aspects that are fundamental for the improvement of cognitive functions.

In addition, musical practice has a direct influence on cognitive processes, as it stimulates motor coordination, auditory perception and the ability to concentrate. Consequently, the sound and rhythmic stimuli present in music favor the formation of synaptic connections, which are essential for the consolidation of learning. Thus, it is possible to say that music enhances brain plasticity, allowing the reorganization of neural circuits as a function of lived experiences.

Furthermore, the positive effects of music on cognitive development can be observed through improved reasoning and problem-solving skills. Likewise, the regular practice of musical activities stimulates working memory, sustained attention and the ability to process multiple pieces of information simultaneously, which translates into better

academic performance and more efficient learning. Thus, music education presents itself as an essential component for the promotion of the integral development of individuals.

Therefore, it is concluded that music plays a transformative role in education, by providing not only cultural enrichment, but also the strengthening of cognitive skills. In summary, the analysis of the effects of music on cognitive development demonstrates that its presence in the school routine is not merely accessory, but essential for the construction of a stimulating educational environment conducive to pedagogical innovation. Thus, music consolidates itself as a formative instrument, promoting not only the development of intellectual skills, but also the strengthening of socio-emotional skills that are indispensable for the formation of critical individuals who are adaptable to contemporary challenges.

MUSIC EDUCATION AND COGNITIVE DEVELOPMENT

Music education stands out as an essential discipline in the training process, because, according to theoretical references, it plays a central role in the expansion of students' knowledge. First, it is observed that music education stimulates several cognitive functions, integrating imagination, attention, memory and musical skills. Thus, studies indicate that the practice of this discipline promotes cognitive development in a comprehensive way, contributing to the integral formation of individuals.

In addition, it should be noted that music education has a relevance that transcends the mere transmission of technical knowledge. As highlighted by Rambo, Almeida and Wolffenbuttel (2018, p.15):

Music education is a fundamental discipline in cognitive development, enhancing imagination, attention, memory and musical skills, as significant forms in the expansion of students' knowledge in the process of musical teaching-learning.

Consequently, this theoretical perspective shows that the discipline is not restricted to training specialists, but also to providing a learning environment that favors the construction of cognitive and socio-emotional skills. In this way, music education is configured as an integrating element, capable of fostering the creativity and critical capacity of students.

Furthermore, the relevance of music in the school context is equally emphasized by other references. Thus, according to Santos, Carvalho and Selva (2020, p. 3), it can be said that "music is a language of great relevance in the school context, as it is a tool that

helps in the richness of stimuli." Therefore, the integration of music education into the school curriculum becomes indispensable for the development of a stimulating and diversified teaching environment. In addition, the benefits arising from musical practice are reflected not only in the improvement of cognitive skills, but also in the promotion of socio-emotional development, consolidating the importance of this discipline for the formation of students.

Thus, it is clear that music education has a transformative character, being crucial for the enhancement of cognitive skills and for the expansion of knowledge in the teaching-learning process. Thus, the systematic implementation of this discipline is evident as an effective pedagogical strategy, contributing significantly to the integral development of individuals.

MUSIC IN EARLY CHILDHOOD EDUCATION - A TRANSFORMING INSTRUMENT OF DEVELOPMENT

Early Childhood Education involves playing, caring and educating in the various dimensions that exist. Thus, it is evident that music, as an instrument for the development of children's learning in early childhood education, brings improvements to mental health, motor coordination and increased sensitivity, contributing to improve their abilities in the learning process. Thus, the importance of integrating music into pedagogical practices from the early school years is highlighted, as exposed by the authors Cabral, Corrêa and Neto (2023, p.1)

Early Childhood Education involves playing, caring and educating in the various dimensions that exist. Therefore, the importance of music as an instrument for the development of children's learning in early childhood education brings improvements to mental health, motor coordination, the increase in sensitivity provided by music that contributes to improving their abilities in the learning process

Furthermore, in line with this perspective, it is highlighted that "From an early age, music can be introduced into the daily lives of children, either through children's songs, musical instruments or even in a playful way, through musical games and games" (Cabral; Corrêa; Neto, 2023, p. 6). In this way, it is evident that the use of different musical approaches enriches the educational environment, allowing students to be actively involved in the proposed activities.

The presence of music in Early Childhood Education acts as a stimulus that rescues the playful character, contributing significantly to socialization and literacy processes, while favoring the management of emotions. In addition, this practice boosts both the development of motor coordination and agility in sound perception (Cabral, Corrêa, and Neto, 2023). Therefore, the implementation of musical practices in the context of Early Childhood Education is configured as a strategy that favors both individual and collective development, contributing to the formation of more critical and sensitive subjects.

When considering the impact of musical experience on early education, it is found that when children are exposed to music from their earliest years, they present significant advances in several dimensions of their education, demonstrating that music acts as a facilitating resource in the educational process (Santos; Oak; Selva, 2020). In this way, music, when incorporated into the school routine, promotes not only the development of cognitive and motor skills, but also stimulates creativity and the ability to socialize students.

MUSIC IN LANGUAGE TEACHING

It is found that the use of songs in language teaching fosters a more dynamic interaction in the classroom, contributing to the development of the four fundamental skills – reading, listening, speaking and writing – "songs can also contribute to greater interaction and conversation in the classroom, facilitating the development of the 4 skills – reading, listening, speaking, write." (Melo, 2021, p. 237). In this way, music presents itself as a strategic pedagogical resource that enriches communication between students.

When reflecting on the teaching of a foreign language from the use of songs, it is verified that the act of listening to or reading a song, associated with the repertoire of previous knowledge of the students, provides a process of intertextuality. In other words, students establish connections between different sources of knowledge, which expands the understanding and acquisition of the second language (Melo, 2021).

In addition, it is highlighted that the playfulness present in musical activities contributes to the attention and motivation of students, creating a more favorable learning environment. Thus, the pedagogical objectives outlined by the teacher are more easily achieved, which favors the effectiveness of the teaching and learning processes (Melo, 2021).

Furthermore, when analyzing the potential of songs as a work tool, it is observed that they promote the rescue of students' identity. In this way, by exploring the students'

previous knowledge, a basis is established that enables the elaboration of reports about their own childhood, allowing an in-depth reflection on personal and cultural identity.

Thus, musical activity proves to be an effective means for valuing individual experiences in the educational context (Melo, 2021). Thus, it is evident that music, when integrated into the teaching of a new language, not only enhances linguistic skills, but also contributes to the construction of a more interactive, motivating and identity-based learning.

WHO TOUCHES, LEARNS

Initially, it is observed that the influence of music on the learning process and cognitive functions is a complex phenomenon rich in facets. In this sense, "Handling a musical instrument is a complex task, which encompasses and influences several modalities and cognitive functions, generating behavioral, functional, and structural changes" (Gonçalves *et al.*, 2021, p. 1).

In addition, the training necessary to achieve excellence in the execution of musical tasks causes lasting transformations both in behavior and in cognitive and functional structures, showing that musical practice promotes long-term changes (Gonçalves *et al.*, 2021). It is verified that the benefits arising from musical training are not restricted only to the specific environment of instrumental practice, but tend to be transferred to other contexts, expanding the scope of cognitive improvements (Gonçalves *et al.*, 2021).

Furthermore, the ability to apply the skills developed through musical practice in different areas suggests a generalization of beneficial effects for cognitive functions that go beyond playing an instrument. The effects observed on musicality, especially in inhibitory control, seem to depend on the complexity of the tasks involved, indicating that variables such as cognitive demand can influence the manifestation of benefits (Gonçalves *et al.*, 2021).

In addition, it is observed that, in activities that require greater conscious cognitive control, adolescents who practice musical instruments perform better compared to their peers who do not practice this practice, suggesting an advantage resulting from musical experience (Gonçalves *et al.*, 2021). This finding reinforced the hypothesis that musical training contributes to the improvement of executive functions, increasing the capacity to inhibit irrelevant responses and the effective management of attention. It was also observed that this superiority was reflected in the execution of tasks that required problem solving and adaptation to new situations, essential elements for academic performance

and social interaction. Thus, the data pointed out that the musical experience provided not only the development of technical skills, but also the consolidation of fundamental cognitive skills, evidencing the transformative potential of instrumental practice in improving learning processes and preparing for daily challenges.

The analysis of the results indicates that the benefits arising from musical training extend beyond the specific domain of instrumental performance, demonstrating that such gains can be applied to other cognitive functions (Gonçalves *et al*, 2021). Finally, although the existence of causality cannot be categorically stated, the data suggest a positive relationship between musical practice and the improvement of executive functions, reinforcing the importance of musical training for cognitive development (Gonçalves *et al*, 2021).

RESULTS AND DISCUSSIONS

Initially, the data obtained demonstrate that the incorporation of music in the educational environment has a significant impact on the cognitive development of individuals. In summary, the main conclusions of the study indicate that musical practice enhances memorization, attention, creativity, and problem-solving skills, in addition to favoring motor coordination and the formation of synaptic connections, corroborating the findings of Santos, Carvalho, and Selva (2020).

The significance of these findings lies in the realization that music is not limited to an aesthetic aspect, but assumes a formative role by promoting brain plasticity and the improvement of cognitive functions. Thus, the presence of music in school and cultural contexts is an essential element for pedagogical innovation, as evidenced in the theoretical references analyzed.

In addition, the findings of the present study relate in a consistent way to previous investigations. For example, the studies by Rambo, Almeida, and Wolffenbuttel (2018) emphasize that music education expands students' knowledge, while Cabral, Corrêa, and Neto (2023) point to the benefits of music in Early Childhood Education, highlighting improvements in mental health, motor coordination, and sensitivity. Likewise, Melo (2021) emphasizes the relevance of songs in the development of language skills in language teaching contexts, which converges with the finding that musical stimuli act comprehensively in the learning process. And finally, the view of Gonçalves *et al* (2021) is addressed, that the handling of musical instruments brings benefits beyond good musical

execution, but that it also enriches the cognitive process. All the theoretical references cited agree that music has an influence on the learning process and cognitive development

However, it is important to emphasize that the limitations of the findings must be considered. Indirectly, these limitations refer to the bibliographic nature of the studies, which, although they provide a consistent theoretical basis, may present methodological and contextual restrictions that limit the generalization of the results to different educational realities. In view of the evidence and limitations presented, it is recommended that future research broaden the scope of the study, adopting follow-up and experimental studies that allow a more in-depth analysis of the mechanisms underlying the influence of music on cognitive development. In addition, investigations that explore the applicability of the findings in different cultural and educational contexts may contribute to a more comprehensive understanding of the benefits of musical training and to the development of innovative pedagogical strategies.

CONCLUSION

At the beginning, it was found that the study allowed us to answer the questions formulated at the beginning of the work, as presented in the introduction and in the methodology. It was observed that the analysis of the data made it possible to understand how music influenced learning and cognitive development, evidencing the transformative role of musical practice in the educational environment.

In addition, it was found that the objectives of the research were achieved. The purposes outlined, which focused on demonstrating that music enhanced memorization, attention, creativity and problem-solving skills, were confirmed through the results obtained. Thus, it was emphasized that the integration of music in the school daily life has been consolidated as an effective strategy for the integral development of individuals.

Finally, the research left relevant notes for future studies. It was suggested that prolonged follow-up investigations be carried out and that experimental methodologies be adopted that allow a more in-depth analysis of the mechanisms underlying the influence of musical practice. Thus, the need to broaden the scope of studies to different cultural and educational contexts was evidenced, in order to verify the generalization of the findings and the transformative potential of music in cognitive development.

REFERENCES

1. Cabral, D. dos S., Corrêa, L. J., & Fernandes Neto, I. P. (2023). A importância da música como instrumento do desenvolvimento da aprendizagem da criança na educação infantil. *Revista Foco*, 16(10), 1–15, e3251. <https://doi.org/10.54751/Revistafoco.v16n10a15>
2. Gonçalves, A., Batista, C., Destro Soares, G., & Moraes, E. (2021). Músicos adolescentes demonstraram melhor desempenho das funções executivas conforme exigência da tarefa? *Research, Society and Development*, 10(1), 1–12, e45010111965. <https://doi.org/10.33448/rsd-v10i1.11965>
3. Melo, P. B. O. (2021). As canções como unidade de ensino na sala de aula de francês como língua estrangeira. *Caletroscópio*, 9, 235–253.
4. Narciso, R., & Santana, A. C. de A. (2024). Metodologias científicas na educação: Uma revisão crítica e proposta de novos caminhos. *ARACÊ*, 6(4), 19459–19475.
5. Rambo, Z. R., Costa Almeida, B. F. da, & Wolffenbüttel, C. R. (2018). Educação musical na infância: Uma investigação sobre sua importância. *Revista da FUNDARTE*, 18(36), 15–30.
6. Santos, G. L. S., Carvalho, E. T., & Selva, O. (2020). A música na educação infantil como uma ferramenta no desenvolvimento cognitivo da criança. *Research, Society and Development*, 9(7), 1–14, e679974291. <https://doi.org/10.33448/rsd-v9i7.4291>