


## Dialogue between Cazuzza and cell theory: Analysis of a pedagogical practice built from the music "ideology"

 <https://doi.org/10.56238/sevned2024.024-009>

Brunna Andreolle Cotrim<sup>1</sup>, Yara Agnes Duarte Fernandes<sup>2</sup>, Danielle Cristina Pereira<sup>3</sup> and Antônio Fernandes Nascimento Junior<sup>4</sup>

### ABSTRACT

This work presents an approach to the principles of Historical-Critical Pedagogy and Historical-Philosophical Education for the teaching of science and biology. For this, an analysis was made of a pedagogical practice that brought the teaching of cell theory through the song "Ideology", by Cazuzza. The objective was to overcome the traditional barriers of teaching, stimulating critical reflection and interconnection between different fields of knowledge. The pedagogical practice involved the in-depth analysis of music and its contextualization in the artist's life, highlighting his fight against AIDS, serving as a starting point to explore the principles of cell theory, demonstrating its relevance to the understanding of health and human conditions. The results revealed that the students not only understood the biological concepts, but also reflected on social issues. The practice stimulated critical thinking, creativity, and dialogue between art and science.

**Keywords:** Cell theory, Music, Pedagogical practice.

---

<sup>1</sup> Undergraduate student in Biological Sciences Degree  
Federal University of Lavras

<sup>2</sup> Undergraduate student in Biological Sciences Degree  
Federal University of Lavras.

<sup>3</sup> Master's student in the Graduate Program in Environmental Education  
Federal University of Lavras

<sup>4</sup> Professor at the Department of Biology  
Federal University of Lavras



## INTRODUCTION

In classrooms, we usually come across teaching that follows traditional pedagogy standards, where students usually memorize the syllabus, reproducing the information that is issued by the teachers. This is even more evident in science disciplines, since they are disciplines that follow a rigor due to their conceptions. What we realize is that the teaching of science ends up being plastered and taught in a harsh way, which can cause students to lose interest.

Therefore, it is important to look for practices that can break with traditional education, which is focused on the formation of subjects prepared for the job market, becoming just another puppet in the hand of Capital. This type of education is known as banking. According to Paulo Freire (1987) it is an education built by the dominant class and which aims to focus on memorizing the subject to reproduce what the teacher passes on, always being fixed in the textbooks. This is a maneuver of the bourgeois class so that students become labor that meets the needs of the capitalist.

In order for the teaching of science and biology to become interesting, arousing the curiosity of students, it is important to continue with pedagogical practices that stimulate creativity and the active participation of all, especially in the construction of knowledge. This type of approach ends up generating debates and conversations in the classroom, addressing several topics relevant to the construction of a historical-critical and historical-philosophical education in the area of biology. Aiming at a practice that breaks with capitalist ideology and contributes to an emancipated education, it is necessary to follow paths that can dialogue with the sciences and allow the teaching-learning process to be built between students and teachers.

Thus, this work aims to make an analysis of the pedagogical practice carried out in the discipline of Biology Teaching Methodology (MEB) at the Federal University of Lavras, which aimed to bring the dialogue between the song Ideology by the singer Cazuza and the cell theory inserted in the conceptual statute of Biology through a historical-critical philosophical approach. The focus of this practice was to awaken enchantment through song, proposing art as a pedagogical resource, seeking a constructivist approach, providing a more participatory and collaborative educational environment.

## HISTORICAL-CRITICAL PEDAGOGY

Historical-Critical Pedagogy is an educational approach that is based on historical-dialectical materialism and historical-cultural psychology. According to Saviani (2003), one of the main authors of this approach, this pedagogy aims to form critical individuals who are aware of the social reality in which they live. Also according to the author, Historical-Critical Pedagogy is based on the assumption that education is a social and historical process, which is directly related to the material conditions of existence of society. In this sense, the school should be seen as a space for political



struggle, where educators must work to overcome social contradictions and build a more just and egalitarian society.

It is worth noting that there is a relationship between theory and practice to be taken into account. Corroborating Saviani (2003), Historical-Critical Pedagogy seeks to overcome the dichotomy between theory and practice, understanding that educational practice must be guided by theory, but that theory can only be built from practice. Another objective highlighted by Saviani (1991) is that Historical-Critical Pedagogy focuses on the formation of critical individuals who are aware of the social reality in which they live. But for this to happen, it is necessary for teachers to work with historically constructed knowledge, seeking to overcome the fragmented and decontextualized view of knowledge.

In summary, Historical-Critical Pedagogy represents an educational approach that aims to develop individuals who are critical and aware of their social reality. She highlights the importance of the interconnection between theory and practice, recognizing that theory is shaped by practice and vice versa. In addition, this approach emphasizes the relevance of using historically constructed knowledge to provide a contextualized and integral education.

It is essential to understand that, according to Saviani (2003), the school is a field of political struggle, where educators play a crucial role in overcoming social contradictions and building a more just and egalitarian society. Therefore, Historical-Critical Pedagogy represents not only an educational philosophy, but also a call to action for educators committed to promoting positive social change.

## **HISTORICAL-PHILOSOPHICAL EDUCATION**

The historical-philosophical perspective is essential for a comprehensive understanding of the construction of scientific knowledge over time. As highlighted by Nascimento Júnior (2010), reality is a product of historical construction and scientific knowledge is an intrinsic part of this process. This perspective reveals that science is not a static domain, but rather a continuous evolutionary process, influenced by social, political, and cultural factors.

Therefore, it is crucial to recognize the importance of the historical and social approach in understanding scientific activity and scientific knowledge. Scientific theories should not be considered absolute truths, but rather provisional explanations that can be improved or replaced by more adequate ones. As pointed out by Nascimento Júnior (2010), intellectual disciplines are in constant development and compete in the search for more precise and comprehensive explanations. Furthermore, the historical-philosophical perspective allows us to understand the different epistemological currents that address the problem of the validity of human knowledge, as also pointed out by Nascimento Júnior (2010).



The historical and social approach to scientific activity recognizes the influence of social, political, and cultural factors on scientific knowledge. This understanding instigates us to reflect on the contextualization of discoveries and to consider how these aspects can shape science over time. In short, the historical-philosophical perspective provides us with a dynamic view of the construction of scientific knowledge, emphasizing its continuous evolution and its close relationship with the social, political, and cultural context in which it is inserted. This critical and reflective approach is crucial for a more contextualized and improved science education.

## THE CONCEPTUAL STATUS AND CELL THEORY

The statutes of biology are fundamental to understanding the structure of scientific knowledge. Thus, we can then emphasize that the statutes are: epistemological, ontological, conceptual and social historical. These statutes are fundamental to understanding the organization and evolution of scientific knowledge over time. When we talk about the conceptual status, according to Nascimento Júnior (2010), it is about the concepts that make up theories and laws. Thus, this statute of biology is made up of five main theories: cell theory, homeostasis theory, inheritance theory, evolutionary theory, and ecosystem theory.

These theories organize the knowledge of biology and allow scientists to explain natural phenomena linked to life. As stated by Nascimento Júnior (2010, p. 381), "the conceptual status of biology is fundamental for the understanding of scientific knowledge in this area, as it allows scientists to explain natural phenomena linked to life". In addition, the conceptual status of biology is studied in a contextualized way, to prepare students for their daily lives. This means that biological concepts are presented in an integrated way with the social, cultural and historical reality of the students, allowing them to understand the importance of biology for everyday life.

Highlighting the cell theory, Miranda (2015) reveals that it arose during much speculation regarding the function and structuring of the tissues that make up plants. Cell biology ended up making it possible to explain how living organisms develop, being through tissues composed of cells. With this, we can also see that cell theory is made up of 3 fundamental principles. The first explains that all living beings are composed of cells. This premise states that all forms of life, from single-celled organisms to complex multicellular beings, are made up of cells.

The second principle shows that the cell is the basic unit of life. It is the smallest functional and structural unit of an organism, being responsible for all the vital activities necessary for the survival and proper functioning of the living being. The third principle reveals that reproduction and the continuity of life occur through cell division, where new cells arise from existing cells. These principles form the basis of cell theory, providing an essential framework for understanding the biological processes and functioning of living organisms and cell theory is crucial for several fields



of biology, including genetics, molecular biology, physiology, among others, allowing for an integrated and contextualized approach to the study of life.

## MUSIC AND SCIENCE TEACHING

The relationship between music and the teaching of science and biology has been the object of study by several researchers. According to Santos, Gobbi and Marsiglia (2015), music can be used as a pedagogical path, as it can help make the content more accessible and interesting for students. According to the authors, music can be used to teach scientific concepts in a playful and creative way, in addition to helping to understand the content.

As Santos, Gobbi and Marsiglia (2015) point out, music can help explain concepts such as natural selection and adaptation, in addition to stimulating students' critical reflection on these topics. Another important aspect of the relationship between music and science and biology teaching is the possibility of using music as a form of artistic expression.

Through artistic expression, students are encouraged to understand complex concepts in a more intuitive and personal way, facilitating the assimilation of the contents covered. In addition, art promotes the integration of knowledge from different areas of knowledge, enabling students to establish connections between different themes, favoring a more contextualized view of the subject under study (Nascimento Júnior, 2010). In this way, art is a pedagogical resource that stimulates interdisciplinarity and transdisciplinarity in education. Another relevant aspect of the use of art in education is its ability to promote social inclusion and the appreciation of cultural diversity (Nascimento Júnior, 2010).

Through a reflective approach, the careful insertion of art in pedagogical practice enables students to immerse themselves in a diverse universe of artistic expressions, unveiling their own inclinations and interpretations. By appreciating art, students are encouraged to become more sensitive and reflective subjects, capable of valuing and contributing to the enrichment of culture and society. The idea that the appreciation of art can contribute to the integral development of students is widely discussed in the academic literature, being defended by several authors, such as Ana Mae Barbosa, author of the book "Art-education in Brazil", published in 2010, and Marcos Ferreira de Oliveira, author of the article "The importance of art in the formation of the individual", Published in 2012.

By valuing art as an autonomous expression, pedagogical practice recognizes the ability of artworks to stimulate the imagination, evoke emotions, and foster a deeper understanding of the cultural and social aspects of humanity. Instead of using art merely as a vehicle to achieve specific educational goals, it seeks to see it as a vector of personal and intellectual enrichment, thus contributing to the formation of students.



From this perspective, the adoption of art as a resource of enchantment gives the class an enriching educational experience, which stimulates the active participation of students and encourages them to proactively engage in the learning process. The intersection between art and education establishes an environment conducive to the development of intellectual curiosity and the construction of knowledge in a meaningful and stimulating way.

## **PROCEDURE AND DEVELOPMENT OF PEDAGOGICAL PRACTICE**

To make the dialogue between music and the teaching of biology, with the intention of addressing the theme of cell theory considering the socio-historical-cultural reality of the students, a constructivist perspective was adopted that sought the joint construction of the concept of cell theory in the classroom environment. This pedagogical approach valued the participation of students in the learning process, allowing them to become active participants in the construction of knowledge, avoiding the mere passive transmission of information. Thus, the class embarked on an interactive and collaborative path, giving greater meaning and relevance to the content covered.

The constructivist practice fostered the development of critical thinking, analytical capacity and intellectual curiosity of the students, encouraging them to be protagonists in the search for understanding and deepening of the themes presented. The integration of multiple perspectives, anchored in the sociocultural reality of the students, provided a richer and more interesting educational environment, enhancing learning and knowledge retention in a more significant way. Therefore, this pedagogical practice aimed to promote a more engaging and effective educational experience, with positive impacts on the students' learning process.

The present pedagogical approach was based on the use of art, more specifically music, as a path of enchantment for the introduction of the theme, considering the relevance of art in education, which is a subject widely discussed in the educational literature. Art is recognized as a form of human expression that enables the creation of new forms of knowledge and understanding of the world, playing a fundamental role in stimulating students' creativity and imagination, making the learning process more captivating and meaningful (Nascimento Júnior, 2010).

Thus, the song "Ideology", by singer-songwriter Cazuza, was selected as a pedagogical resource to start the construction of thought in the classroom. This song was used as a starting point and aimed to contextualize the theme of cell biology, stimulating student engagement, promoting the connection between art and scientific knowledge. The choice of music was a pedagogical decision that aimed to start a dialogue that aligned with the interdisciplinary approach adopted.

One of the authors who defend the importance of art as a pedagogical tool is Lev Vygotsky. In his sociocultural theory, Vygotsky (1978) highlights the importance of art as a form of language that allows the individual to develop his capacity for communication and his understanding of the world.



He argues that artistic forms can be used as a pedagogical practice to promote the cognitive, emotional and social development of students, especially in collaborative and interactive learning contexts, this also applies to musical compositions.

The use of music as a pedagogical resource offers several advantages, as song lyrics can contain metaphors, messages, and reflections that stimulate critical thinking and analysis. In the case of "Ideology", the singer's approach to social and existential issues can allow a debate on aspects related to cell theory and the essential role of cells in the life of living beings. Through the analysis of the lyrics, it is possible to identify excerpts that address topics such as health, disease, human vulnerability and the importance of the proper functioning of cells for the survival of organisms.

By using music, the class became more dynamic and engaging, encouraging the active participation of students, allowing them to express their opinions and interpretations. Through discussions and reflections guided by the teachers in charge, the students were able to develop critical analysis skills, interpretation of complex content and construction of arguments based on the experiences brought by the students in the classroom. In this context, the song "Ideology" was a path to promote a deeper reflection on the importance of cell theory, as well as its implications for the understanding of life and health.

One of the main concerns underlying the conduct of pedagogical practice was to avoid the excessive instrumentalization of art, recognizing its inherent autonomy and valuing it as a genuine expression of human creativity. This idea is shared by several authors, such as Theodor Adorno (1970) and Walter Benjamin (1936), who emphasize the importance of art as a form of resistance and criticism of the dominant society, and warn of the dangers of the instrumentalization of art as a means of controlling and manipulating the masses.

This pedagogical approach, based on the non-instrumentalization of art, reverberates the importance of providing students with the opportunity to explore their expressiveness, creating an enriching environment, in which students can develop their aesthetic sensitivity and critical thinking, deepening their appreciation for multiple artistic manifestations.

At the beginning of the activity, a sheet of paper containing the transcription of the lyrics of the song in question was made available to the students, accompanied by an image of the singer. Then, the students were asked to perform the task of highlighting the excerpts of the song that most caught their attention.

Then, after everyone listened to the song, the students were given another sheet of paper containing relevant news about Cazuza's life and his fight against AIDS.

After reading the new material, the students were asked to highlight the phrases that caught their attention in the news and try to connect them with the music. During the process of preparing the didactic material, a detailed analysis of the song was made, as well as the pertinent news, with the





purpose of establishing a connection between the musical work and the singer's life, focusing on the theme of AIDS.

This path provided a foundation for the joint construction of knowledge with the students, demonstrating the practical application of biology in a sociocultural context. It should be noted that this approach, in line with a thorough analysis of each textual component, gave relevance and meaning to the discussion about the role of cells in the functioning of living organisms, emphasizing the intrinsic relationship between cellular function and the viability of life.

The intersection between the musical theme and AIDS allowed us to contextualize the effects of this disease on the immune system, highlighting the impacts on cellular defense activity. By adopting this pedagogical practice, we seek to promote an understanding of different fields of knowledge to broaden students' view of the importance of the cell in the constitution and maintenance of life, as well as their vulnerability to certain health conditions, such as AIDS.

## FINAL CONSIDERATIONS

Considering the nuances explored in the pedagogical practice of the discipline of Biology Teaching Methodology (MEB) at the Federal University of Lavras, a deep reflection on traditional teaching methods and the imperative need for educational innovation emerges. The intersection between Cazuza's song "Ideology" and academic content proved to be a transformative pedagogical strategy, provoking not only the intellectual interest of the students, but also their imagination and sensitivity. In this pedagogical approach, cell theory, a fundamental pillar of biology, has gone beyond the confines of the classroom, deftly intertwining with the artist's life story.

This encounter between scientific knowledge and artistic expression not only allowed for a deeper understanding of cellular principles, but also highlighted the relevance of biology in understanding human health and conditions, as evidenced by Cazuza's fight against AIDS. The practice adopted, based on the historical-critical and historical-philosophical pillars, breaking with the mere transmission of information, provided students with an educational experience that resonated in their personal and social experiences.

The thorough analysis of music and its historical context has not only illuminated the complexities of cell theory but has also instigated deep reflections on social and existential issues, thereby enriching students' understanding of the world around them. In addition, the non-instrumentalized approach to art as a pedagogical resource emphasized not only the importance of music as a vehicle of knowledge, but also its intrinsic autonomy as a form of human expression. This not only respected artistic integrity, but also encouraged students to embrace music as a language through which they could explore and understand complex scientific concepts.





Thus, by breaking through the conventional barriers of teaching, this pedagogical practice stimulated meaningful and lasting learning, challenging students to think critically, to explore the interconnection between disciplines, and to appreciate the richness of artistic expression.

### **SUPPORT**

The authors thank CAPES, CNPq and FAPEMIG



## REFERENCES

1. Adorno, T. (1970). *\*Teoria Estética\**. Martins Fontes.
2. Barbosa, A. M. (2010). *\*Arte-educação no Brasil\**. Perspectiva.
3. Basso, J. D., et al. (2016). *\*Pedagogia histórico-crítica e educação no campo: história, desafios e perspectivas atuais\**. Pedro & João e Navegantes.
4. Benjamin, W. (1936). *\*A obra de arte na era de sua reprodutibilidade técnica\**. WMF Martins Fontes.
5. Freire, P. (1987). *\*Pedagogia do oprimido\**. Editora Paz e Terra.
6. Miranda, M. H. G. (2015). *\*Trajetórias formativas de professores formadores e suas concepções de biologia e de seu ensino: uma análise a partir dos estatutos estruturantes da biologia\** (Dissertação de Mestrado, Universidade Federal de Goiás, Goiânia).
7. Nascimento Junior, A. F. (2010). *\*Construção de estatutos de Ciência para a Biologia numa perspectiva histórico-filosófica: uma abordagem estruturalmente para seu ensino\** (Tese de Doutorado, Faculdade de Ciências, Universidade Estadual Paulista, Bauru).
8. Oliveira, M. F. (2012). A importância da arte na formação do indivíduo. *\*Revista Eletrônica de Educação\**, *\*6\**(1), 1-12.
9. Santos, R. A. dos, Gobbi, M. A. A., & Marsiglia, A. C. (2015). O popular e o erudito na educação escolar na perspectiva histórico-crítica. *\*Revista HISTEDBR On-line\**, *\*15\**(63), 1-16.
10. Saviani, D. (2003). *\*Pedagogia histórico-crítica: primeiras aproximações\** (10ª ed.). Autores Associados.
11. Saviani, D. (1991). *\*Pedagogia histórico-crítica: primeiras aproximações\**. Autores Associados.
12. Vygotsky, L. S. (1998). *\*A formação social da mente: o desenvolvimento dos processos psicológicos superiores\** (6ª ed.). (José Cipolla Neto, Luís Silveira Menna Barreto, & Solange Castro Afeche, Trans.). Martins Fontes.