

USE OF AMAZONIAN NATIVE SERPENTS FROM HATCHERIES IN DIALOGIC-EXPOSITIVE CLASSES

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ABSTRACT

The present study analyzed the application of a dialogic expository class using native Amazonian animals from authorized breeding facilities in a class of 31 eighth-grade students from a public school in Manaus, Amazonas. The research was developed and applied over 3 consecutive classes throughout the weeks, totaling 20 hours of instruction, introducing the topic gradually until reaching farm animals. Data collection is based on two diagnostic instruments: the first, with open-ended questions, administered before the content introduction to assess prior knowledge; and the second, with only closed-ended questions, administered after the classes to assess post-intervention learning. The results of the questionnaires showed significant percentages in both the first questionnaire, regarding each student's prior knowledge of the topic to be presented, and in the responses to the questions after the introduction of the topic, considering the experience lived in the classroom with the animals. This study concludes that the use of captive animals as a teaching resource constitutes an effective strategy for Environmental Education, fostering ecological responsibility among elementary school students.

Keywords: herpetology, wildlife management, zoology education.

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1. INTRODUCTION

The construction of effective teaching strategies is a fundamental pillar for improving learning, defined by the degree of intentional, guiding conception of coordinated actions (ROLDÃO, 2007). In this sense, the process of knowledge transmission, historically organized in a didactic manner (PENIN, 2003), requires that the educator act as a professional in constant improvement, capable of planning and stimulating the subject's various capacities (BORDENAVE & PEREIRA, 2002). This approach is essential to overcome the characteristics of traditional teaching, in which the student is seen as a passive subject and the teacher as the sole holder of knowledge (NICOLA & PANIZ, 2016).

To foster student interest and critical thinking, it is necessary to transform the classroom into a dynamic environment by using varied teaching resources that facilitate students' relationship with knowledge (SOUZA, 2007; SETÚBAL, 2003). Among these strategies, the use of animals for didactic purposes dates back to the early stages of scientific evolution in the study of morphology and physiology (PASSERINO et al., 2014). However, although the use of euthanized and formalin-preserved individuals is traditional in Zoology classes (LIMA & FREITAS, 2009), contemporary studies point to a growing negative view of this practice, questioning the inappropriate use of dead animals in teaching settings (BONES, 2012; DINIZ et al., 2006).

Given this scenario, it is assumed that using live animals from breeding facilities licensed by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) constitutes an innovative approach for expository classes. This alternative not only meets the requirements of Law No. 9,605/1998, but also enables the dissemination of Environmental Education by providing experiences and interactions that bring people closer to animals (BRASIL, 1998). The relevance of this strategy is reinforced by the context of urbanization, which has altered human perception of nature, often reducing it to a position of subservience (EFFTING, 2007). Aligned with the National Common Curriculum Base (BNCC, Brazil, 2018), science education should highlight the interactions between living beings and the preservation of biodiversity.

In the specific case of the Amazon region, such awareness is urgent to demystify taboos and cultural legends that negatively impact local fauna, as is the case with native snakes, such as

the jiboia (*Boa constrictor*), which are frequently killed due to propagated fear, despite the scientifically proven absence of venom. Therefore, the use of farmed animals for didactic purposes is an active and effective method for conveying content memorably and stimulating cognitive development and autonomy (MONTEIRO, 2020).

From this perspective, the research aimed to provide an expository and dialogical lesson in a primary school in Manaus. Specifically, it sought to assess students' prior knowledge of native animals, introduce the curriculum content, and use snakes as a teaching resource to broaden students' understanding of the species' phenotypic aspects, combining pedagogical practice with environmental responsibility.

2. MATERIAL AND METHODS

2.1. Study area and research steps

The research was conducted with a class of 31 eighth-grade students from a public municipal school in Manaus, Amazonas, Brazil, in a dialogic expository lesson.

To investigate knowledge of local fauna, the presentation of native species and their particularities was proposed, as such knowledge can save lives and prevent accidents involving wild animals in urban areas near forests (LINHARES *et al.*, 2024). In this context, it is essential to foster discussions in schools about the importance of these animals, especially reptiles such as snakes, which are often perceived as dangerous due to prejudice and misinformation (BERNARDES *et al.*, 2016).

The development of a learning process aims to construct new knowledge, enabling the learner to systematize information (FAGUNDES *et al.*, 2006). For the development of the study, four stages were carried out: 1) Planning = Elaboration of the lesson plan on habitat and physical characteristics of snakes; 2) Diagnosis = Conversation about native snake species and application of a questionnaire about prior knowledge; 3) Intervention = Interactive lecture on first aid and differentiation between venomous and non-venomous animals, focusing on native Amazonian snakes; 4) Practice and evaluation = Observation of the anatomical characteristics of the snakes and application of a final questionnaire (Table 1).

Table 1 – Lesson plan of didactic sequence.

Steps	Goals	Methods	Resources	Activities
Diagnosis	Assess prior knowledge on the subject.	Application of a preliminary questionnaire on the topic.	Preliminary questionnaire with open-ended questions.	Answer the preliminary questionnaire.
Intervention	Introduce the content to be covered.	Interactive lecture on the topic.	Blackboard. Marker. Eraser.	No activities.
Practice and evaluation	To display native Amazonian snakes from a breeding facility for better visualization of their characteristics.	An interactive lecture on the topic with the aid of animals.	Final closed questionnaire.	Answer the final questionnaire with closed-ended questions.

Source: Municipal Education Department of Manaus – SEMED (2015) and Canto (2009).

2.2. Chat about native species of serpents and the application of the previous questionnaire

The first contact with the class was a brief introduction, a simple formality to help everyone get to know each other. Afterwards, a conversation began between the teacher and the class about the various types of acquired and intrinsic knowledge each individual possesses. During this process, the theme began to be addressed through the exchange of experiences, followed by an open-ended questionnaire to understand better the level of knowledge about the subject to be covered in the following classes. The questionnaire had five questions:

- 1) Have you ever heard of serpents? If your answer is yes, which one?
- 2) Are all serpents dangerous to us humans?
- 3) Have you ever heard a story about serpents?
- 4) What should I do when a serpent appears?
- 5) Are all serpents venomous?

For each question, the student was free to elaborate on their answer. Although there was no identification in the questionnaire, they showed great enthusiasm for collaborating on the research so we could proceed with our following classes.

2.3. Dialogic expository class about first aid and between non-venomous animals, focusing on Amazon native serpents

The topic addresses first aid in the event of accidents (Table 1), suggesting that the teacher teach basic identification procedures and the general characteristics of these native species, whether venomous or not (SEMED, 2015).

The planned and prepared lesson consisted of introductory content on the range of native Amazonian snake species. Although there are so many that it is impossible to know the characteristics of each, we focused only on those that commonly appear in homes, such as boas (*Boa constrictor*), and those that are potentially dangerous, such as the jararaca (*Bothrops atrox*).

The educational institution generally had basic infrastructure and few resources to deliver lessons, so we used a blackboard, a marker, an eraser, and printed photos to teach the introductory lesson, presenting all relevant information about the species. Answering questions and having active student participation.

2.4. Observation of anatomical features of the serpentes and application of the final questionnaire

After the content was introduced in the second phase of this project's development, the third phase involved the use of animals, or rather two snakes, a rainbow boa (*Epicrates cenchria*) and a common boa (*Boa constrictor*) (Figure 1).

Figure 1 – Management of the common boa (*Boa constrictor*) for students' observation.



Source: Hidalgo (2021).

During the course of developing this project, it was decided with the field supervisor that we would guide the students on the activities carried out, since they were live animals and species that, for the most, causes fear, dread, and astonishment in people, we aware of them, and obtained positive feedback from the class with high levels of excitement, as they could hardly wait for the rest of the classes.

The third moment took place during the content review of the previous class; the animals began to be displayed. The animals were not used merely for exhibition purposes without a central objective, to bring knowledge in a different way to the classroom, so the roles were reversed, the students were able to touch, look at and feel the animal and thus exchange with the other colleagues even with the teaching staff present about everything that had been learned since the first moments of the classes taught. We noted that planning and the partial introduction of the content yielded effective results, from a behavioral perspective of the individuals present. Finally, the second and final questionnaire was administered, consisting of five closed-ended questions. These were:

- 1) Are all snakes venomous?
- 2) Should I kill a snake when I see it?
- 3) Do snakes play an important role in nature?
- 4) Do you consider the lesson taught important for your learning?
- 5) After the lessons, did you research more about the subject we studied?

3. RESULTS AND DISCUSSION

3.1. Previous knowledge questionnaire

The analysis of the first questionnaire revealed significant insights into students' prior knowledge, which was characterized mainly by superficial answers. An absence of environmental awareness was observed prior to the introduction of formal content, suggesting that the students' conceptions are largely reflections of pre-established social constructs (SALVADOR; PRIETO; PASTRANA, 2017). This initial perception corroborates the idea that nature is often perceived as an external element, distant from human experience, highlighting a weakness in the research subjects' environmental awareness and responsibility (LERMEN & FISHER, 2010).

Regarding the identification of species (1st question), the predominant answer, "Yes, Anaconda," demonstrates that the students' zoological repertoire is strongly influenced by media such as films and the internet. This replication of information without adequate scientific depth indicates that knowledge of local fauna is mediated by global, sensationalist content, to the detriment of observing real Amazonian biodiversity (BALLOUARD; BRISCHOUX; BONNET, 2011). Regarding danger (2nd question), the majority assertion that serpents could "eat human beings" is intrinsically linked to the cultural imagination of the region. In the Amazon, legends such as the "Great Snake" play a preponderant role in shaping perceptions of risk (SILVA, 2020). Although there is no anatomical evidence to support the consumption of humans by snakes in the local fauna, the folkloric component reinforces the belief that animals over 2 meters in length pose a direct anthropophagic threat, thereby reinforcing the negative stigma about the group (COSENDEY & PEZZUTI, 2025).

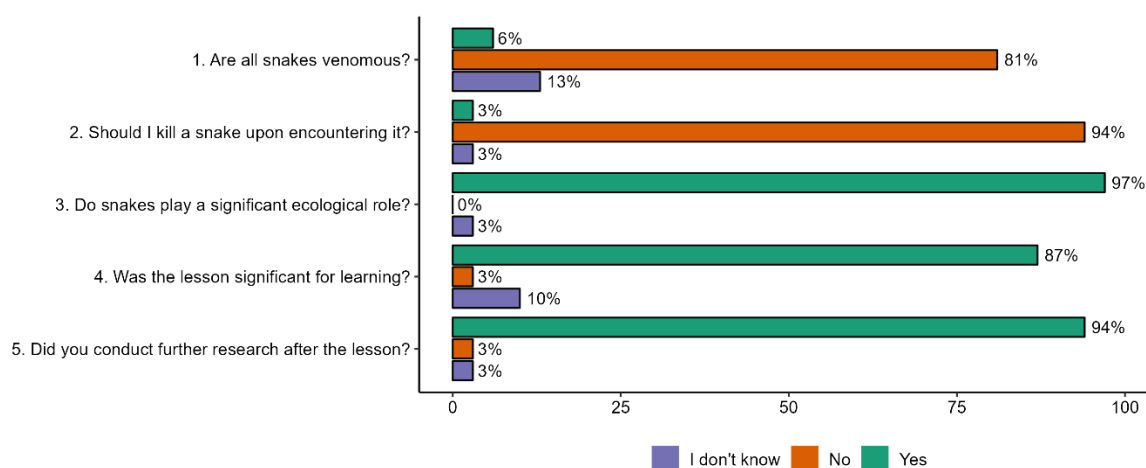
In the repertoire of narratives (3rd question), references to stories transmitted by previous generations ("my grandmother told me") highlight the importance of traditional knowledge in the student's education (BAPTISTA, 2010). Scientifically, this knowledge should not be labeled as incorrect, but rather integrated into the teaching-learning process as prior knowledge that requires pedagogical mediation (FREIRE *et al.*, 2021). Considering both mythological and scientific knowledge is fundamental to an education that respects students' cultural backgrounds while building scientific literacy (BAPTISTA, 2010).

The behavioral analysis upon encountering the animal (4th question) revealed fear and aggression, as evidenced by responses such as "kill" or "scream and run." The atavistic fear of snakes, although understandable from an evolutionary point of view, manifests itself in the extermination of individuals, which directly harms ecosystem balance and biodiversity (TOMAZIC, 2011). Finally, the uncertainties regarding snake toxicity (5th question) reinforce the urgency of applying Environmental Education to local realities. Addressing regional fauna is important for students to understand their role in the ecosystem, to transform school knowledge into practical action, and to multiply environmental responsibility in their community (OLIVEIRA *et al.*, 2020).

3.2. Results analysis of the second questionnaire

The data obtained through the second questionnaire reflect the project process (Figure 2). Although the instrument provided significant insights, the students' experiences and testimony regarding their behavioral changes related to the topic were equally relevant to the analysis. The planning and application of the educational process enable individuals to understand, become aware of, and act in ways that foster an ecologically balanced awareness of human intervention in the environment (CAVALCANTI NETO & AMARAL, 2011).

Figure 2 – Responses to the closed questionnaire.



Source: Authors (2021).

In this scenario, Carvalho (2006) states that the proposal for Critical Environmental Education stands out as a possibility for constructing a new path of thinking, aimed at the formation of values and attitudes necessary for a new stance towards environmental issues through an

emancipatory educational process. It is understood, therefore, that the role of the educator consists of forming critical beings, capable of thinking and generating ideas, in which information is transmitted not by an absolute holder of knowledge, but through an exchange of experiences that makes the relationship between teacher and student lighter and more enriching.

Science teaching requires active strategies and methodologies to address complex subjects, making it necessary to seek engaging classroom activities (CAMPOS; SILVA; BRAZ, 2025). In line with this thinking, the National Curriculum Parameters indicate that stimulating cognitive development enables greater social participation by students, enabling them to exercise citizenship autonomously (PIASSI, 2011). Furthermore, it is worth noting that everyone's social role in relation to environmental issues underscores the need to integrate conservationist messages into the curriculum (SURALIN, 2023). The author emphasizes that this integration aims to empower students to analyze global situations holistically, going beyond mere decoding of terms and nomenclature, so that they understand that the knowledge they acquire does not diverge from the reality in which they are embedded.

About science education, it is considered imperative to enable students to become active citizens, capable of playing roles and sharing responsibilities to reverse the environmental crisis (NOGA; ANTIQUEIRA; JACINSKI, 2021). To this end, the school institution must focus on attitudes and the formation of values, going beyond the mere transmission of information and concepts. After all, as Carvalho (2006) states, the formation of the individual only acquires meaning if it is thought of in direct relation to the world in which they live and for which they are responsible.

4. FINAL CONSIDERATIONS

Historically, the relationship between humans and animals encompasses affection, subsistence, and science. On Amazon, this connection is reinforced by the cultural custom of Xerimbabo, the practice of raising wild animals as family members. However, the didactic use of fauna still presents gaps, with global trends questioning traditional practices based on fixed specimens.

In this scenario, Environmental Education emerges as an essential approach to bring humans closer to nature. The use of live animals from licensed breeding facilities offers a humanized pedagogical proposal, focused on demystifying taboos and raising awareness. This strategy, although innovative, does not deny the importance of traditional teaching; on the contrary, it integrates with it to expand the possibilities in the classroom, especially in environments with limited infrastructure.

The effectiveness of this methodology lies in the teacher's ability to stimulate the students' multiple senses, sight, touch, and hearing, promoting real pedagogical inclusion and combating disinterest. In summary, this work proposes a complementary strategy that reaffirms education as a transformative agent and the undergraduate degree as a fundamental basis for understanding and preserving ecosystems.

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