



## Teaching the Sensory Nervous System through Research Methodology

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### Abstract

*The present work sought to associate a research-based teaching methodology with the theme of the constitution and functioning of the sensory nervous system. Research-based teaching was used to propose an alternative teaching methodology capable of arousing students' interest along with knowledge of the nervous system, which is often considered extensive and complex to understand. The research was developed with a qualitative approach and sought to analyze the development of students during an investigative didactic sequence on how the interpretation of the meaning of pain works by the nervous system. Initially, a questionnaire was proposed with the objective of collecting students' initial conceptions about research-based teaching in Biology classes, then an investigative didactic sequence was developed where problem questions were proposed to the students, who raised questions for these questions, subsequently, students carried out research to prove their hypotheses. At the end, students were asked to develop a form of dissemination of the entire process carried out by them during the research. The research data was collected through a logbook and the Bardin technique was used for analysis. It was observed that the possible didactic sequence using investigative teaching was successful in making students produce knowledge about the functioning of the feeling of pain, it was also possible to note that it is necessary for the education system to pay greater attention to this very important issue in the people's daily lives.*

**Keywords:** Sensory Nervous System, pain sensation, Biology teaching, research-based teaching, didactic sequence.

### 1. Introduction

Understanding pain goes beyond physical perception, encompassing aspects psychological, philosophical and spiritual. In a context in which science reveals its neurobiological complexities, there is an interest in exploring its emotional and existential. Research-based teaching emerges as a pedagogical approach challenging, capable of stimulating the student's interest and critical reflection on pain. This one work investigates the use of this approach in Biology classes using the sense of pain as a theme, seeking to understand its educational implications and its contribution to a holistic view of pain. Associate research-based teaching specifically with the theme of the system pain-sensitive nervous system is interesting, as it presents a good alternative for that students have the possibility, during the development of the didactic sequence, to seek relevant and contextualized information.

The general objective of the work was to investigate the construction of knowledge by students from a didactic sequence on the sensory nervous system using the research teaching approach.

### 2. Methods

The research was carried out in two stages: in the first, a questionnaire was proposed mixed with open and closed questions, available in appendix A, which was answered by the students containing questions about their conceptions about the structure and functioning of the sense of pain. The questionnaire was used to provide faster and more accurate answers, in addition to allowing freedom in responses (Marconi; Lakatos, 2003). The second stage was the proposition of a didactic sequence, which, according to Zabala (1998, p. 18), "is a set of ordered, structured and articulated activities to achievement of certain educational objectives". The didactic sequence on the nervous system sensory in which students were led to think about the knowledge they have about the content



and formulate hypotheses, in addition to carrying out research and proposing solutions to questions presented on this topic.

At the end of the research process, they were asked to develop a way to disseminate to the school the results of their work, that is, the conclusions they reached through the investigative process. The form of disclosure has not been determined, and it may be a mind map, a table, a flowchart, among others, they are the ones who would decide the form of dissemination.

To conclude the research, a conversation circle was held with the intention of seeking information from students about the construction of knowledge on the topic researched and provide a moment for them to share their personal experiences and learning related to the topic. The conversation circle took one class and had six guiding questions, however, throughout the process other questions emerged from according to the development of the topics discussed.

### 3. Results and Discussion

The product of this work is the development of a didactic sequence on the pain sensitive nervous system. The didactic sequence consists of using situations problems related to the sense of pain so that students can seek resolve the situations.

When analyzing the research and all its stages, several parameters were observed to understand whether students were effectively able to construct knowledge through didactic sequence used. These parameters include: participation in the research, discussion in raising hypotheses and developing research, change or confirmation of initial hypotheses in relation to the final conclusion and the relationship of situations researched with everyday situations.

The didactic sequence presented showed us that it is possible to make students build quality knowledge even with few teaching resources. Your results show that when the student is interested and motivated, the construction of the knowledge happens more easily and teaching through investigation, by taking problematizations similar to those found in everyday life, makes students curious and able to develop the stages of the didactic sequence and consequently build knowledge about the subject.

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