



Nature of Science

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The importance of the nature of science in today's world

This article aims to address how the nature of science can help to demystify stereotypes about science and the work of scientists in order to understand the development of science in today's world and in our country, as we have experienced an explosion of false news and an increasing disbelief in relation to doing scientific.

For this we have to define the term nature of science which means a set of elements that deal with the construction, establishment and organization of scientific knowledge. This can range from internal issues, such as scientific method and the relationship between experiment and theory, to other external ones, such as the influence of social, cultural, religious and political elements in the acceptance or rejection of scientific ideas.

The understanding of the nature of science and of fundamental importance in decision-making with regard to science and technology and in the literature there are two different approaches on the nature of science, on the one hand consensualists who want to discuss only consensual aspects, these aspects would be a list of clear and objective principles of what is involved in the construction of scientific knowledge. On the other hand, those who defend the concept of family resemblance.

There are some aspects that we can reflect around consensual approaches such as: Science is changeable, dynamic and aims to explain natural phenomena. This aspect is very important, since it details the objective of science and denies that science is made up of an absolute truth and that scientific knowledge is constantly changing. There is no universal scientific method. Contrary to common sense views, there is a broad consensus that there is no set of universal rules for doing science. The theory is not a consequence of observation/experiment and vice versa. In common sense we have the view that theory is always the consequence of observation

and experimentation, but in the current literature we realize that the relationship between theory and experiment is very complex. Science is influenced by the social, cultural, political context, etc., in which it is built. This aspect shows that no scientific or scientific idea is surrounded by an insurmountable dome; on the contrary, their conceptions, the issues of the time, the place in which they live and the influences they suffer can play an important role in the acceptance, rejection and development of the ideas of Science. Scientists use imagination, personal beliefs, external influences, among others, to do Science. There is in common sense a perspective that the scientist is alien to the world, making a science neutral and free from external influences, however this vision and reductionist and scientists are human beings who feel, make mistakes and use their world view in making scientific. Now that we have seen consensual aspects, we will address some aspects around the concept of family similarity, the authors work with four categories of family similarity for the nature of Science: activities, objectives and values, methodologies and methodological rules, and products.

Activities

For the authors, observing and experimenting are typically science activities. However, the practice of observing, although common in almost all areas of science, can be different for each one of them. Objectives and values. According to some authors, we do not need to stick to any of these concepts, which the consensus view generally does, and only to understand that each individual Science can have a different purpose according to the various philosophical interpretations that we may have of them.

Methodologies and methodological

Rules

It is not possible to do Science without adopting methodological rules and methods, or rather, scientific knowledge is not built

randomly, however it employs certain parameters, some common to all areas of Science.

Products

Science, with its activities, seeks to fulfill its objectives based on its own methodologies. This generates products, which can be hypotheses, laws, theories, models, experimental data, etc. In its final stages, products become knowledge or a rational belief.

The nature of science in Brazilian education

In Brazil, the nature of science is mentioned in curricular documents as the National Curriculum Parameters for Secondary Education (PCNEM) and also in the national education plan. According to this document, teacher training courses should incorporate, among other points, a broad cultural background and the analysis of current issues in society, culture and the economy.

This article intended, in this sense, to offer an overview of what has been and has been done. As a result, Brazilian researchers who are new to or experienced in the subject can have an overview of what has been discussed so far, reinforcing their search for references in the area and enabling the expansion of the dialogue between the works produced in the country and abroad. From that, we believe it is possible to establish new directions, consolidate and expand those that have been presenting good results.

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