THE SUN AS A THEMATIC AXIS IN PHYSICS TEACHING

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Introduction

The teaching of physics faces a barrier often experienced by students, generally associated with the complexity of its theoretical content. The frequent absence of analogies with everyday life makes teaching physics a challenge for teachers. Physics starts from basic concepts to encompass the range of knowledge that exists today. The purpose of this work is to show that solar physics, a subject that seems distant from reality, is very present in everyday life and in topics that can be discussed in high school. This theme can be used as a teaching tool, since the Sun is a natural laboratory for the study of countless physical processes and the main agent for sustaining life on Earth. Some phenomena that occur on our star, such as flares and coronal mass ejections, can negatively affect modern society, given their high capacity to suppress the functioning of high-frequency communication systems, disrupt the reception of geolocation signals, overheat high-voltage transmission lines, and damage pipelines that carry fossil fuels. Therefore, it is worth noting that the study of solar physics is important for understanding the world in which we live.

Objective

The purpose of this work is to promote science education through topics related to the study of solar physics, which have great potential to enrich student learning and increase the general public's interest in science.

Methodology

This is a review of the existing literature on the possibilities of using solar physics in educational activities.

We searched for scientific papers on the internet using reliable databases and specific keywords. The keywords used in the searches included terms such as “solar physics,” “Sun,” “science education,” “educational activities,” “physics teaching,” and “sunspot.”

The selected works were carefully read and summarized to extract relevant information, such as the objectives of the educational activities already carried out, the topics covered, the methodology applied, and the results obtained.

This information was then organized and categorized to identify patterns, trends, and divergences in the literature.

In particular, the review involved a critical analysis of the methodologies employed in the studies reviewed, evaluating the validity of the approaches and instruments used.

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Results

Twenty-six academic papers were initially selected, analyzed, read, and reviewed. Of these papers, six focused on physics education, addressing topics related to solar physics, while twenty dealt specifically with the study of solar physics.

Among the papers analyzed, the use of topics related to the areas of **spectroscopy** (which were present in twelve papers) and **magnetism** (which were present in fourteen papers) stood out, making it possible to discuss concepts from both classical and modern physics.

Figure 1: The solar corona revealed during an eclipse expresses the magnetic nature of the Sun through its field lines, providing an educational approach to one of the four fundamental forces of nature. Photo of the 1999 solar eclipse in Romania, with an ultraviolet image taken by the SOHO/NASA-ESA satellite.

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