Classroom implementation 1: Testing sunscreen - An experiment about the effect of UV rays on the skin and the mitigation that sun creams can provide

The didactic sequence of this practice pretends that 14-16-year-old students experiment on the effects of UV rays on the skin and the attenuation that several filters can provide, such as solar creams. It is also intended that students develop a proposal to promote responsible exposure to the sun using solar filters. In this way, students are expected to learn how to make decisions based on scientific aspects related to their daily lives. The purpose of the practice is to develop a vision of science as a discipline close to day-to-day life in students.

Video: https://youtu.be/MKPvnf-iSC0

Materials and Equipment

The material needed to perform this activity is:

- Computers with Internet connection (ideally, one per a group of about 4 students).
- An UV radiation sensor, which can be either connected to the computer, or to a mobile device.
- Different sun creams with different UV filters
- Cling film

Instructions/procedure

The session is divided into 3 main parts of approximately 4 hours of total duration, which are distributed as follows:

- First part: Presentation of the context and exploration of the previous ideas of the students and search for information that can help answer the problem described.
    - 1. Orientate yourself: In this section, the need of using sun protectors to prevent the damage inflicted by the UV rays on the skin is introduced to the students. Different information is shown to provide evidence of the relevance of the context.
    - 2. What do we know?: In this section, students are asked about their previous ideas about the context, the effect of UV rays on the skin and other related scientific ideas.
- Second part: Design of an experiment to compare the solar filter offered by several creams and interpretation of the collected data.
    - 3. Let's seek answers!: In this section, students are asked to design an experiment to measure the UV rays that pass through several filters made with solar creams. Before gathering data, students are asked to express their predictions in relation to the results (which cream is thought to be more opaque and why, etc.) in order to test their initial views.
    - 4. Making numbers...: Students are asked to analyze the data gathered and to provide an explanation for the obtained results based on the scientific ideas discussed on previous sections.
- Part Three: Preparation of conclusions and proposal for the use of solar creams and / or solar filters

- 5. A step further: In this section, students are asked to provide conclusions according to their experiences and to apply their knowledge to interpret another similar situation.

References/bibliography

Les cremades solars, didactical sequence for the study of UV radiations

Contact & Credits

This activity has been developed by the CRECIM (Centre de Recerca per a l'Educació Científica i Matemàtica), a Research Centre of the Universitat Autònoma de Barcelona.

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