

Hazard from above

which sunscreen should we choose?

Implementation of a PROFILES module by Israeli teachers



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Abstract

Getting a sunburn or increasing the risk of skin cancer is an everyday situation, of youth as well as grownup population in the Mediterranean countries. Decisions whether to put on sunscreen, which kind and what is the best way to use it are essential. This PROFILES module allows the students to gain knowledge in order to be able to make better and more educated decisions. Research and inquiry are held in the scientific as well as the social fields.



1st presentation of the Sunscreen module at the 2011 PROFILES course

Rationale

- Curriculum Content:** the interaction between radiation & matter, emulsions - structure & preparation.
- Social and Educational Goal:** Creating an awareness of the hazards originating from a long exposure to solar radiation.
- Relevance:** Sunscreen is a product aimed at protecting its consumers' health. It is perceived by youth as a "sexy" product, because it is related to sports & leisure activities & is relevant to both genders.
- Skills:** asking questions, focusing on main ideas, literature research, planning & executing an open-ended Inquiry experiment, presentation of experimental results & conclusion drawing, decision making, peer learning & cooperation.

Contents of the Activities

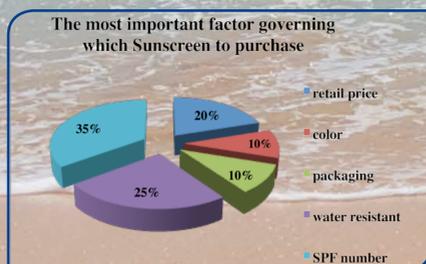
Activity	Duration
Introduction	1 lesson (45 minutes)
Discussion & Instruction	1 lesson
Laboratory	double lesson
Laboratory	double lesson
Summary	1 lesson



An open-ended inquiry experiment at the laboratory:
1. applying self-made sunscreen lotion of different viscosities
2. fluorescent beads are used as a detection system for solar UVB radiation
3. waiting for results in the sun
4. preparation of sunscreen lotion



preparing a poster presenting the Sunscreen module's rationale



results obtained by the market pole activity

Evaluation of student through the process

The students are asked to hand in a group portfolio which includes:

- the opening brainstorming assignment
- the market research report
- the lab report of their experiment
- a summary of the module referring to decision making
- personal reflection of each member of the group

The portfolio is evaluated by criteria such as: compliance & quality of the different tasks required, clarity & fluency of the scientific language as well as the argumentation. The involvement of the students in the process is evaluated according to their personal reflection.

Implementation

The module was implemented in 3 different high schools in Israel to 10th - 12th grade students. Apart for the required activities of the module, students took part in other unique activities, such as preparing sunscreen lotion in the school laboratory, creating a tutorial movie on the subject, and creating different kinds of market surveys.

Open-ended experiments, held by the students investigated some of the following research questions:

- The dependence of emission response of fluorescent beads on the thickness of the layer of sunscreen applied.
- Does Sunscreen of different colors & same SPF show similar screening efficiency?
- How does the viscosity of a self-made sunscreen influence its screening efficiency?



presenting the self-made sunscreen lotion

Reflection

Students:

"A student from a unique new-immigrants class coming from the former Soviet Union: "Now we understand the importance of using sunscreen in Israel. This subject intrigued our parents & families as well as us."

"First of all - I loved the subject of this activity. It is relevant & close to my everyday life, especially because it is now the beginning of the summer. After going through the different activities & tasks, you realize for the first time how sunscreen really works."

"Everything I've learned during the course on the sunscreen module changed my attitude towards it. All the hazards related to sun radiation that I've encountered caused me to think twice before I decide not to put on sunscreen!"

Teachers:

"The teaching of the sunscreen module was the highlight of the educational activity in the class all year long. From the curricular point of view - the module had little connection to this year's syllabus, but the importance of the subject and the interest shown by the students made me realize that I had made the right decision. I feel that allowing my students to study in a different way, to be creative, involved and inquisitive - raised the level and quality of the educational activity in class and made the activity fun for my students."



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