Geophysical Research Abstracts
Vol. 16, EGU2014-2354, 2014
EGU General Assembly 2014
© Author(s) 2014. CC Attribution 3.0 License.

Demonstration of the greenhouse effect for elementary school students

Jelena Radovanovic
Elementary school „Slobodan Sekulić“, Užice, Serbia (lena.radovanovic@gmail.com)

The school where I work is part of the “Step by step towards the sustainable development school” project. Project activities are partly directed towards the popularization of science.
As a physics teacher, I have had the opportunity to engage in designing interactive workshops, aiming to introduce younger students to simple experiments which illustrate different natural phenomena, and also in organization, preparation and implementation of school and city science festival (in 2012 and 2013). Numerous displays, workshops and experiments served to introduce a large number of visitors to different topics in the area of science and technology.
One of the subjects of forthcoming science festival, planned for May of 2014, is the climate change. To that effect, eight grade students will hold a demonstration and explanation of the greenhouse effect.
Although the terms greenhouse effect and global warming are widely used in media, most of the elementary school students in Serbia have poor understanding of the underlying scientific concepts. The experiment with analysis and discussion will first be implemented in one eight-grade class (14 years of age). After that, a group of students from this class will present their newly-acquired knowledge to their peers and younger students at the science fair.
Activity objectives:
• Explain how atmosphere affects the surface temperature of Earth
• Conduct an experiment to demonstrate the greenhouse effect
• Analyze the consequences of climate changes

Experiment description:
Take two empty, transparent containers and add a layer of garden soil. Use cardboard or similar material to make housings for the thermometers. Hang them in the containers, so that they don’t touch the soil. Cover one container with a glass panel, and leave the other one open. Place identical incandescent light bulbs at the same distance above each container. Turn the light bulbs on. The students should mark the thermometer readings every 2 minutes, for 20 minutes in total. Turn the light bulbs off and continue the measurements in the same way. Use the acquired data to plot a graph of temperature against time for both containers. Analyze and discuss the results.

Although the experiment itself is simple, conducting it and subsequently analyzing the results contributes to numerous goals listed in the official physics curriculum, such as: development of functional literacy; understanding of phenomena, processes and natural relationships based on physical laws; development of active learning through research; understanding of methods behind experiments and importance of measurements; development of ability to apply knowledge of physics; understanding of interconnections between physics and ecology and increasing awareness of the need to protect, restore and improve the environment.
Physics classes are an appropriate place to conduct this experiment, because it builds on knowledge of heat transfer methods, with the potential to gain new insights into the properties of electromagnetic spectrum, and is highly correlated to other disciplines, most notably with chemistry, mathematics and ecology.