

Technology and education: First approach for measuring temperature with Arduino

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This poster session presents some ideas and approaches to understand concepts of thermal equilibrium, temperature and heat in order to build a man-nature relationship in a harmonious and responsible manner, emphasizing the interaction between science and technology, without neglecting the relationship of the environment and society, an approach to sustainability.

It is proposed the development of practices that involve the use of modern technology, of easy access and low cost to measure temperature. We believe that the Arduino microcontroller and some temperature sensors can open the doors of innovation to carry out such practices. In this work we present some results of simple practices presented to a population of students between the ages of 16 and 17 years old.

The practices in this proposal are: Zero law of thermodynamics and the concept of temperature, calibration of thermometers and measurement of temperature for heating and cooling of three different substances under the same physical conditions.

Finally the student is asked to make an application that involves measuring of temperature and other physical parameters. Some suggestions are: to determine the temperature at which we take some food, measure the temperature difference at different rooms of a house, housing constructions that favour optimal condition, measure the temperature of different regions, measure of temperature through different colour filters, solar activity and UV, propose applications to understand current problems such as global warming, etc.

It is concluded that the Arduino practices and electrical sensors increase the cultural horizon of the students while awakening their interest to understand their operation, basic physics and its application from a modern perspective.