World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:10, No:09, 2016

An Attempt to Improve Student´s Understanding on Thermal Conductivity Using Thermal Cameras

Authors : Mariana Faria Brito Francisquini

Abstract : Many thermal phenomena are present and play a substantial role in our daily lives. This presence makes the study of this area at both High School and University levels a very widely explored topic in the literature. However, a lot of important concepts to a meaningful understanding of the world are neglected at the expense of a traditional approach with senseless algebraic problems. In this work, we intend to show how the introduction of new technologies in the classroom, namely thermal cameras, can work in our favor to make a clearer understanding of many of these concepts, such as thermal conductivity. The use of thermal cameras in the classroom tends to diminish the everlasting abstractness in thermal phenomena as they enable us to visualize something that happens right before our eyes, yet we cannot see it. In our study, we will provide the same amount of heat to metallic cylindrical rods of the same length, but different materials in order to study the thermal conductivity of each one. In this sense, the thermal camera allows us to visualize the increase in temperature along each rod in real time enabling us to infer how heat is being transferred from one part of the rod to another. Therefore, we intend to show how this approach can contribute to the exposure of students to more enriching, intellectually prolific, scenarios than those provided by traditional approaches.

Keywords : teaching physics, thermal cameras, thermal conductivity, thermal physics
Conference Title : ICPE 2016 : International Conference on Physics Education
Conference Location : Singapore, Singapore
Conference Dates : September 08-09, 2016