Education and Culture
Lifelong learning programme
COMENIUS

Background

General didactical background

Background idea is an interdisciplinary approach with science. Students shall experience Mathematics reasonable, significant and interesting by extra-mathematical references; learning in contexts shall contribute to an intuitive mathematic understanding. By means of scientific contexts and methods the often watched gap between formal maths and authentic experience shall be closed on the one hand and versatility of mathematic terms or formulas shall be experienced on the other hand.

The lesson is intended to be used as showing the applicability of potential function (rational power) – more precisely – of function x3/2. A physical background is shown by the oscillation of a torsional pendulum.

Physical and Mathematical Background

The background is developed at the Teaching Material (see there).

The idea of teaching implementation

Proportional and quadratic dependence are commonly showed using various examples. However it is not so easy to find an example of $x^{3/2}$ dependence. Besides it should describe very simple phenomenon. Therefore the use of torsion pendulum which is a kind of a torsional harmonic oscillator is a perfect example. Its behavior is analogous to translational spring-mass oscillator. Very accurate and easily obtained measurements enables students to explore a functional dependence, which is between power 1 (proportionality) and power 2. In addition slightly modified experiment could easily provide us an example of square function.

This project has been funded with support from the European Commission. This publication reflects the views only of the author(s), and the Commission cannot be held responsible for any use which may be made of the information contained therein.