# Developing a Module to Teach Thermodynamics in an Integrated Way to 16 Year Old Pupils

**Author**: Leen Goovaerts, Mieke De Cock, Katrien Struyven, Wim Dehaene

**Year**: 2019

## Abstract

In order to motivate secondary school pupils for STEM studies and professions, a teaching approach with a focus on integration of STEM components is developed. This paper focuses on the integration of physics and mathematics into an engineering design problem in K10 education, namely building and heating a model of a passive house with a sun boiler. Specific attention is given to the core ideas of integrated STEM while developing this module. These applied ideas comprise problem-centered and cooperative learning, with explicit attention to research and design, as well as taking into account results from discipline specific educational research results.

**Keywords**: thermodynamics, secondary education, problem-based learning

**Referanse:** Goovaerts, L., De Cock, M., Struyven, K., & Dehaene, W. (2019). Developing a module to teach thermodynamics in an integrated way to 16 year old pupils. *European Journal of STEM Education*, *4*(1).10.20897/ejsteme/3964

**Tag**: matematikk, fysikk, problembasert læring, prosjektbasert læring

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Revision #2
Created 13 June 2023 08:14:00 by Admin
Updated 4 September 2023 12:05:57 by Kristin