

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

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## 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

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

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