

## A review on enhancing the teaching and learning of thermodynamics

### Abstract

Thermodynamics is a subject that deals with energy and is one of the most advanced tools for understanding our physical universe. Engineering students' difficulties in learning thermodynamics occur globally as indicated by the literature. There are various studies reporting on efforts made to overcome the deficiencies and suggestions of teaching approaches to enhance students learning such as blended learning approach, active learning techniques, computer-based instruction, virtual lab – a web-based student learning tool for thermodynamic concept related to multi-staging in compressors and turbines, TESTTM software in design projects and laboratory and so on. This paper presents a review and analysis of the different approaches on supporting students learning of thermodynamics. The criteria for analysis are the characteristics of the learning system, the effectiveness based on students' performance; the skill developed using the learning system, and students' feedback.