

**Problem-Based learning online in Thermodynamics Cours (SF20503).A  
Preliminary study at the Universiti Malaysia Sabah.**

**Abstract**

The research attempts to investigate the students' performance in a new constructive approach known as problem-based learning online (PBLonline). PBLonline was fully intervened in a second year physics' course known as Thermodynamics encoded as SF20503 in Semester I Session 2011/2012. The intervention took place at the School of Science and Technology, Universiti Malaysia Sabah (UMS) located eleven kilometer from Kota Kinabalu, Sabah. Forty-one physics students under the Physics with Electronic program took part in the intervention and they were divided into seven small groups consist of five to seven people each group. Under the approach, each group were undergone a fully constructivist learning process such as, collaborative learning, active learning, independent learning and work in group in order to solve their main daily issue that they choose at the beginning of the semester. 16 weeks were given for them to undertake all the learning process such as construct their own learning, come up with hypothesis, synthesizing and analyzing the potential way of solution, find information in many angles and perspective and last but not least they need to come up with a possible better solution of all. There were seven big problems and each group need to solve only one of them. In additional the Learning Management System (LMS) provided by the university and also the Facebook had been used as the main medium for the groups to get connected to each other and with the facilitator. They need to discuss to their issue every once in a week with the facilitator via online (e.g., group chatting, forum, uploading, downloading, e-mail). Besides they also need to present their progress report and final report findings by group separately: one in the middle of the semester; and second during the fifteenth week, as to show they did their assessment continuously. Each group also sent their reports on their final findings and solution. The data were gathered from the final exam's grade as the outcome knowledge from the PBLonline and then been compared to the previous three session before the PBLonline for the same course (Session 2008/2009; 2009/2010; and 2010/2011). As the result,

the grade's analysis reveals that the percentage of students who's got grade C and below dropped around 32 percent. Thus leads to the results that those who got grade C and above increased significantly from 64 percent to 95 percent. Therefore this may give some positive description that PBLonline have its potential in improving students' grade in overall. However a holistic research needs to be done in order to really identify the real deal between the PBLonline and the students' outcome based learning in various perspectives.