Metacognition influences on physics problem solving ability and improves pre-university student achievement

ABSTRACT

Metacognition is a concept that has been recognized as a required skill for students to succeed in physics problem-solving. The main purpose of this study is to identify the pre-university students' level of metacognition in physics problem-solving ability which influences their achievement in the final examination result. This descriptive research involved 267 pre-university students from Universiti Malaysia Sabah. Quantitative data analysis techniques, which includes the frequency, mean and standard deviation were used to analyze the data. Physics Metacognition Inventory (PMI) was used to measure the level of metacognition in physics problem-solving. The result of this study indicated that the level of pre-university students' metacognition in physics problem solving is at a high level with ($M = 3.68$, $SD = 0.212$). Results also show that the level of metacognition influences their achievement in the final examination result, where the higher the students' level of metacognition is, the better the student's achievement in the final examination results. The findings from the study suggest that it is important for metacognition to be applied in physics problem-solving to solve physics problems, and it can also be used as a teaching technique for pre-university students to meet their learning needs.