

Relationship between Dimension Metacognition and Students' Ability Level in Physics Problems Solving Involving the Use of Free-Body Diagram

ABSTRACT

Problem solving in Physics using Free-body Diagram (FBD) is complex and need to be planned carefully. Students who possess metacognitive awareness can make problem solving involving FBD easier. Therefore, this study aims at identifying the level of students' ability in solving physics problems involving the use of FBD and the student's metacognition as well as the relationship between all the dimensions in metacognition with their ability in solving physics problem. 300 Form 5 Science students from schools around Johor Bahru involved in this study. The data was collected using a set of instrument that includes paper-and-pencil test, known as Force Problem Solving Ability and Physics Metacognition Inventory (PMI). The findings show that the level of students' ability in solving physics problems involving the use of FBD was low, while the level of students' dimensions of metacognition was at a moderate level. The correlation analysis shows that a positively low and significant relationship between students' ability in solving physics problems involving the FBD with their dimension of metacognition. These findings suggest that teachers should emphasize thinking at the metacognition level among the students and to use different strategies in different physics problem solving.