

Applying the Michael and Wittmann's Framework to Analysis of the Force and Motion Conceptual Evaluation Test

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In the last three decades, much work has been done regarding the identification of students' misconceptions in fundamental physics, especially related to the topic of force and motion. Many of these misconceptions are widely shared and re-appear in different groups of students. For example, many students believe that the net force on an object is proportional to its velocity rather than its acceleration, an object with a larger initial speed exerts more force than an object with a smaller initial speed during a collision, and heavier objects exert more force than lighter ones. It has also been shown that traditional instruction is relatively ineffective in correcting these misconceptions or in helping students develop more appropriate ways of thinking. In this research the active teaching and learning modules in the force and motion concept section were designed and implemented into a high school classroom in Kalasin province. The students' conceptions before and after teaching were assessed with the Force and Motion Conceptual Evaluation test (FMCE). The results found that only a small percentage of high students grasped Newtonian concepts.

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