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Cambodian students' prior knowledge of projectile motion

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Students always bring intuitive ideas about physics into classes, which can impact how they learn and how successful they are. To examine what Cambodian students think about projectile motion, we have developed seven open-ended questions and applied to grade 11 before (N=124) and after (N=131) conventional classes. Results revealed several consistent misconceptions, for instance, many students believed that the direction of a velocity vector of a projectile follows the trajectory at every position. They also thought the direction of an acceleration (or a force) follows the direction of motion. Two objects, which freely fall from the same height, spend different time to reach the floor because of different paths of motion. The greater angle of the launched projectile creates the greater horizontal range. The hand force imparted with the ball leads the ball goes straight to hit the target. The acceleration direction points from the higher position to lower position. These misconceptions will be used as primary resources to invent instructional instruments to promote Cambodian students' understanding on projectile motion concepts in a following work.

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