

# Experiential learning model in two-dimensional kinematics

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**Year:** 2019

## Abstract

Researchers have shown students develop misconceptions in projectile motion for various reasons. A common misunderstanding among first-year high school physics students is the notion that the horizontal and vertical components are interchangeable in projectile motion. The students' incorrect reasoning is connected to their personal experiences when they claim a heavier object will reach the ground before a lighter object when dropped from the same vertical height. When the students are asked about two objects projected horizontally with different speeds from the same height, they will quickly assume that the faster horizontal moving object will hit the ground first, reasoning that the horizontal speed directly affects the vertical speed. The students fail to notice that the initial vertical velocity equals zero. This article describes the implementation of an experiential learning activity that addresses students' confusion and helps improve their conceptual understanding of kinematics in two dimensions. Generated from experiences, experiential knowledge is not always correct due to inaccurate interpretations. Therefore, teachers need to select experiential activities that will have the greatest learning potential. Sometimes the greatest impact an experience can have is using small collaborative groups with whole class discussions. Similar to life experiences, experiential learning relies on collaboration, which gets the students directly involved reinforcing and/or clarifying previous knowledge into a new context.

**Keywords:** Physics, experiential learning

**Referanse:** Daniel, A. (2019). Experiential learning model in two-dimensional kinematics. *The Physics Teacher*, 57(9), 648-649. <https://doi.org/10.1119/1.5135803>

**Tag:** fysikk, utforskende arbeidsmåter

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Revision #2

Created 14 June 2023 15:07:22 by Admin

Updated 4 September 2023 12:33:58 by Kristin