

A study of students' basic concepts of astronomy using an Astronomy Diagnostic Test (ADT)

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To enhance astronomy outreach activities, this research investigated the baseline conceptual understanding of secondary school students in northeastern Thailand. We administered the Astronomy Diagnostic Test, Thai version (ADT-TH v2.1), to 168 students in a science-focused program at a large secondary school prior to their participation in a 'Sci-School Lab' outreach event hosted by the Faculty of Science, Khon Kaen University. The ADT-TH, adapted from the CAER ADT v2.0, is a 21-item multiple-choice instrument validated for the Thai context. Analysis of student responses revealed significant misconceptions. Over 50% of students answered correctly on only three concepts: the relative distance of celestial objects, the center of the universe, and the relationship between a star's color and temperature. Notably, the concept of weightlessness was the most challenging, with only a 3% correct response rate. These findings provide a clear diagnostic of student difficulties and are being used to design targeted, hands-on activities for the Sci-School Lab program. The validated ADT-TH will also serve as a pre/post-test instrument to measure the effectiveness of these new activities.

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