

Analysis of Understanding in the Speed of an Electromagnetic Waves and in the Principle of Refraction: a Case Study of KMUTT (Ratchaburi) Engineering Freshmen

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Learning achievement in fundamental electromagnetism performed by 110 engineering freshmen, enrolled in 2017 at King Mongkut's University of Technology Thonburi (Ratchaburi), is presented. Activities for the class had not only been conducted by traditional lecture, but also with an integrated project assignment. Two key concepts in physics, the speed of an electromagnetic (EM) wave and the principle of refraction, delivered to students by two different teaching and learning are selected for comparison. Preliminary results are analyzed from students' score in the final examination. Some of students' misconceptions are found in both selected topics. From the comparison, the teaching and learning methods through the project activity, together with the lecture, seem to yield a great number of well-understood students than those through the lecture alone. Further investigation is also discussed based on rank of students' score. The findings in this paper stress an important of well-designed projects that complement the traditional lectures in classroom.

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