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Students' Understanding of the Inverse Square Law in Electrostatics

One problem of learning Electrostatics is that students often learn by using their common-sense beliefs about electric force and electric field. This study investigated students' conceptual understanding of finding electric force, electric field and electric potential from a point charge after learning an introductory physics course We administered the Electrostatics Conceptual Evaluation Test to four lecture-based classes in high school. The first question was a comparison of the electric force from two point charges at two different positions and the second question was a comparison of the electric field from a point charges at two different positions. The use of the inverse square law is required to find the electric force and the electric field at a new position. It was found that many students answered incorrectly. They described that the electric force and the electric field decrease as the distance increases by neglecting the inverse square law. This finding can be particularly used to suggest high school teachers develop their effective strategy to support student learning.
Keywords: Inverse square law, Student understanding, Electrostatics

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