Title:	Investigating Epistemic Understanding of Undergraduate Students in Physics.
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Abstract:	This thesis aims to investigate the content-based epistemic understanding of undergraduate students in chained arguments of a physics derivation involving multiple areas of physics through an assessment tool. This work builds upon the study by Sirnoorkar et al. that used a three-fold classification (nominal, physical, mathematical) of epistemic categories, which further split into several distinct epistemic categories. The assessment tool estimates the ability of the students to differentiate between different epistemic categories associated with each proposition of physics derivations. Different sets of assessment tools, with each comprising a different combination of physics derivations, are constructed. The students are expected to choose an appropriate epis- temic category for each proposition in the derivations. The epistemic mistakes for different derivations are studied and compared to the ones described by Sirnoorkar et al., who used a single derivation in their last epistemic survey. The tool is accompanied by an orientation note that describes each epistemic category for clarification. Students' Content knowledge is estimated from their grades in the subject at the higher sec- ondary level, and a correlation of content knowledge with epistemic knowledge is studied. Surveys on large and diverse samples of physics undergraduates reveal a variety of epis- temic errors. Our method of epistemic measure limits the meaning of the term epistemic understanding; however, it provides us with certain advantages. The construct validity of the tool and the pedagogic relevance of the work are discussed.
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