Quality science education to a larger populace is integral to the economic and societal progress of any country. Undoubtedly the challenges faced in this regard are enormous. One should adopt a systematic and scientific approach towards identifying and addressing the underlying problems. This constitutes the broad goal of science education research, of which physics education research (PER) is a sub-discipline. In this talk, I will discuss my work in this area which involved the development of a diagnostic and assessment tool in rotational kinematics (concept inventory) aimed at probing student difficulties, misconceptions and pitfalls. We are currently working towards developing an instrument to assess interdisciplinary thinking in natural sciences at the undergraduate level. In addition to my own research, the talk will review some of the major trends in PER, their status in US and the enormous potential the discipline holds in a country like Qatar aiming to be a knowledge-based economy.