One of the outstanding problems of physics is how to make its education attractive and effective. Physics is alluring to the enquiring mind keen on understanding the nature of things and pushing the frontiers of knowledge. However, most students find the subject difficult to comprehend. This underpins global concerns about dwindling interest in physics among young students, lack of inclusiveness and flight of talent to other disciplines. Given its strategic importance, there is a felt need to revitalize physics education in culturally relevant ways for diverse student populations. Insight is provided by seminal Physics Education Research that has helped define a new agenda for teaching-learning environments the world over. Systematic investigations have focused on the learning process and established the gaps that exist between what is taught and what is learnt. In-depth studies on student construction of meaning, difficulties with fundamental concepts and problem-solving, suggest the need for developing instructional materials and teaching strategies that impel active mental engagement. Emphasis is also on enhancing learning through social interactions, motivating peer learning and collaborative work. The question is how best to create an environment where learning is, both, hands-on and minds on. Examples show that the classrooms of the future will be technology enhanced fully networked active learning environments that integrate lecture, laboratory blending diverse research-based pedagogies. Transforming the ecosystem is a complex task in which teachers play a critical role. The transfer of pedagogic innovations into the formal classroom has to be facilitated by professional development programs that aim to provide experiential learning of research-based teaching practices; catalyze the process of reflection through classroom research; and establish a collaborative network of teachers empowered to usher radical transformation. Within this framework, I will also provide an example of Physware series of Educate the Educator Workshops that promote active learning through use of appropriate technologies and aim to create a community of practice.