

# Making Sustainability as Core of Engineering Education

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## Abstract

The need to address sustainability topics through education curricula interventions is studied in this paper from the practitioner's view point. The survey results of 307 senior and experienced engineering professionals on the topic of sustainability are collated and analysed. The paper not only emphasises the need for engineering curricula enhancements but proposes some key themes at a macro level. The paper also articulates possible benefits by making engineering education sustainability focused.

**Keywords:** sustainability; engineering education; environment; curricula; engineering.

## 1 Introduction

Though industrialization has proved to be a boon to the masses and has helped elevate the standards of living, it also inadvertently and deliberately ignored and overlooked negative the impacts on the environment. The pendulum of such progress has swung too far away from nature. Thus, nature is no longer able to meet the insatiable greed of humans in a sustainable manner. The time is ripe to restore the balance before it gets too late.

The frequent and catastrophic environmental changes have forced practitioners, organizations and governments to take the issues of climate changes seriously. What used to be mainly a topic of academic research has drawn attention of the influencing members of the society. The past two major revolutions like the agricultural and industrial happened gradually and in an unconscious manner; the sustainability revolution would be based upon understanding, usage and leverage of science [1].

Engineering work exerts a profound impact on social, economic and cultural aspects of human lives and hence it ends up in significantly impacting environmental and sustainability aspects [2]. The

contemporary education agenda is mainly focused on improvements of individual product, system or services performance while simultaneously cutting down costs. Current education tries to address aspects like pollution control and conservation of energy. It provides training in terms of creation of safe work environments to workmen. To address sustainability, the educational system needs to leap-frog the enhancements. It needs to shift focus from incremental improvements to innovation-based improvements. It needs to teach a system-based view that is multi-disciplinary in nature and that can set ambitious goals towards pollution prevention rather than pollution control. It also needs to shift attention to sustainable energy and resources from traditional financial gains-based resource view [3]. Most of higher education focuses on individual learning and does little to foster the collaboration and multi-disciplinary approach to solve large and complex problems faced by humanity. The systematic changes in higher education is a need of an hour in teaching collaboration and help understand the larger world view [4].

Studies after studies have stressed the need for engineers to receive systematic exposure to the