

From Mathematics to Technology: A Bridge through Physics and Engineering

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The deaf and the dumb equations of *mathematics* are made to speak through *physics*¹, which is the formulation of general laws applying, mainly, inductive logic. *Engineering* is modeling from the general laws to create practical systems. *Technology* is the implementation and the adaptation of a laboratory model to create a working system, which could be mass-produced. The journey from *mathematics* to *technology* could be considered as a journey from the abstract to the concrete, *mathematics* being in books, in the minds of philosophers, *physics* making contact with outside world, *technology* becoming the stage, where one enjoys the blessings. The training of mathematicians² and physicists³ should inculcate creative thinking and make them capable to critically analyze problems⁴, taking them from various stages of concept building to equip them with problem-solving skills⁵. Problem solving in the classroom should prepare them to problem solving in the laboratories, and, eventually, problem solving in the industry. This paper illustrates how simple activities, like measurement of height and determination of safe-viewing distance for watching television could reinforce concepts and techniques from various disciplines, including mathematics, physics, chemistry, biology, engineering, health and safety. Mathematics curricula should give students the practical skills needed by a prospective employer. The paper describes the behavior-based interview format for teachers in mathematics, elaborating technical and performance skills needed for these jobs and examines if the recently-prepared mathematics curricula^{6,7} for BS, MS and PhD by Higher Education Commission, Government of Pakistan are preparing students in this regard and whether they are, properly, interfaced with the pre-university curricula⁸⁻¹⁰.

Keywords: Curriculum development, concept building, problem solving

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