

Engineering Education to Innovation and Commercialization

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Education is to look at the world in a meaningful way and to respect the society. In engineering we use it to solve problems to achieve a better quality of life. In developing solutions to technical problems, a professional should initially look at the issue in a simplified and a fundamental approach, and, then develop the proposed solution in a significantly detailed manner, while exploring the global knowledge in the same subject area. If one could add a business dimension to the problem and the proposed technical solution, it could lead to commercialization and wealth creation for a nation as well.

In the above exercise which we sometimes call '*inventing*', subject-educated person should start working on a solution by first applying simple fundamentals to understand the issue and if necessary quantify the engineering aspects of the problem. Presenter has practically learnt that if he is unable to define the problem clearly in a simple manner, inventive solutions are rare to achieve. In the presentation, he will present several simple engineering examples to explain this.

In research and development environments, educated people in developing countries tend to complain that lack of funds and lack of high tech facilities hinder our progress in inventing things. Presenter strongly believes that this need not be the case, and in contrast the most important element in inventions and research is to apply the creative faculties of the brain with simple subject fundamentals in a practical way to address a

problem. Once a research team start this creative and detail-minded approach to "*solving a practical problem*" they naturally develop the courage and the justification to convince the management to request for the facilities. In the modern world of management, obsessed with commercial profit making targets, a research team should work with a business approach to justify the resources they require.

In this process, success is generally measured by the intellectual property we generate, and also the commercial products we can create. An organization with an active R & D group should be able to develop a commercial sub-group to take the creativity of the R & D group into the wealth creation domain. Presenter will present some of his New Zealand experiences in this aspect.

In every country there are unique engineering problems, where unique solutions can be proposed by practical R & D teams. Sri Lanka is not different in this aspect and if these unique engineering problems are identified engineering organisations can help the society in wealth creation as well as quality of life improvements.

In the presentation few classic examples in the areas of energy saving, lightning and surge protection, and environment will be used to show how simple engineering gets extended into details with a commercial flavour, while adopting new devices and technologies.