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University - Industry partnership : An engineering perspective

By Asitha Jayawardena

Research, according to Marston Bates, is the process of going up alleys to see if they are blind. If this is a good definition (which sounds not, at least as far as engineering research is concerned), whether various alleys are blind or not was made public at the sixth Annual Symposium of the Engineering Research Unit (ERU) of Moratuwa University on December 7, 2000. The theme, as usual, was Research for the Industry.

A total of 22 papers were presented. Some of the papers were joint efforts with Ceylon Electricity Board, Central Engineering Consultancy Bureau, Western Province Engineering Organisation, Road Construction and Design Company, Energy Conservation Fund, Sri Lanka Army and Cambridge University.

Prof. (Mrs) Indra Dayawansa, Chairman ERU, welcomed all. Prof. L.L. Ratnayake, Dean, Faculty of Engineering, spoke on University/Industry Partnership Programmes; Prof. Dayantha Wijeyesekera, Vice Chancellor, spoke on Facilitation of Contract Research through a Private Company. The Guest Lecture was by Prof. R.P. Gunewardena, Secretary, Ministry of Science and Technology. With the Vote of Thanks by Dr. Amal Kumara, the Inaugural Session ended.

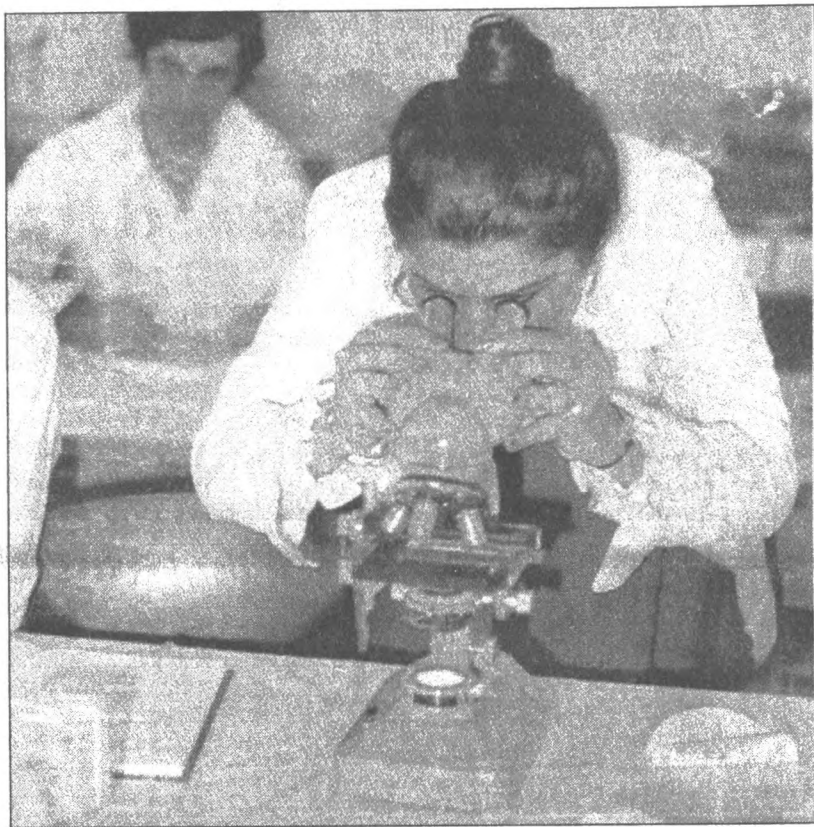
The following is based on the speeches mentioned above:

In solving the day-to-day problems of the Sri Lankan Industry, such as testing of materials or calibrating of equipment, the Sri Lankan universities help them. However, universities have not done enough for long-term research and development - process development, value addition etc. Take value addition for example. We export ilmenite to Japan and then, pay thousands of times more to buy value added ilmenite (ie paint). Moreover, a priceless treasure of resources is all around us, the sea; but little research is done on its hidden wealth.

Cooperation between the Universities and the Industry is vital for the development of a country. Like any other partnership, this University/Industry partnership would not work unless both parties are benefitted. In other words, one plus one should be greater than two.

The industry has its own problems. The universities in fact should go to the industry and solve its problems. This can be done through industry-related research and consultancy. Teaching alone is no longer enough. Fortunately, this has been realized and the universities are prepared to change to have a closer relationship with the industry. In fact the University Reform Bill is being drafted now, favouring this thinking.

One such university committed to a stronger closer relationship with the industry is the University of Moratuwa. Its mission is to be an internationally recognised centre of excellence in teaching, research, consultancy and other professional activities in engineering, architecture and allied professional fields by creating an environment conducive to nurturing the inquiring mind and developing skills for a diversity of challenges and thus to be a leader in contributing for sustainable, scientific, technological, social and economic development of Sri Lanka.



University students in the lab.

When the Engineering Programmes at Katubedda, Moratuwa were started in 1966 with the assistance of the UNESCO, the engineering degree courses had a strong industry bias. There was one year of industrial training, a final year project relevant to the Industry, industrial visits, visiting faculty and industry relevant subjects such as Building Construction, Highway Engineering, Industrial Electronics and Production Engineering.

In 1990 the University established its Engineering Research Unit (ERU) to promote engineering research and disseminate its findings. Realising that research not implemented in the Industry as a waste, it started strengthening a link between the University and the Industry. In 1995 the first annual symposium on iResearch for the Industry was held. Ever since, the theme had been the same: Research for the Industry.

Over the past two decades the Sri Lankan Industry has changed rapidly with the dominant role played by the private sector. The need to establish University/Industry Partnership is therefore greater than ever. In this context the University Council approved to establish Industry Advisory Boards in the Faculty. Major industrial sectors, major companies and government sector industries will be invited to join these Programmes. Moreover, on all major initiatives of the Faculty, advice will be sought from these Industry Advisory Boards.

Several issues these Boards may discuss are:

Relevance of curricula to Industry needs

Student scholarships and awards

Mentor Scheme for students with mentors from Industry

Industry internship or Industrial Training Programmes

Industry funded research

Named laboratories and specialised training of undergraduates in selected areas of studies

Named Lectureships, Chairs or Professorships

Visiting faculty and Adjunct Professors from Industry

University/Industry staff exchange programmes

New modes of teaching and learning in engineering programmes

Continuing professional development programmes for Industry

Industrial visits and Open Days in the University

Consultancy services for Industry

Establishment of a Technology Watch Group

Contract Research, which is in fact the combination of research and consultancy, can be effectively employed to strengthen the University/Industry link. However, due to conflicts and delays resulting from stringent procedures, the University would not be able to market its expertise and facilities and project its consultancy activities over and above the main function of teaching. Moreover, such delays would inhibit the Industry from working together with the University. Therefore, a separate establishment called UNIC will be set up for this purpose.

UNIC is an Association / Private Limited Liability Company established by the Registrar of Companies under the Companies Act. Its founder members will include the Vice Chancellor, Dean Architecture, Dean Engineering, Chairman of Senate Research Committee, Registrar, Bursar, Librarian, Chairman ERU and Chairman ARU (Architecture Research Unit). It obtained the approval of the University Council in May 2000, and is expected to be a reality in January 2001.

The Engineering Faculty of Moratuwa University is richly blessed with a wealth of human resources in its staff, postgraduates and undergraduates. To harness this is possible only through University/Industry Partnership. Thus Sri Lanka's much desired goal - the NIC status is not far away.

Note: The following papers were presented at the 6th ERU Symposium :

Civil Engineering

Development and evaluation of the aesthetics of structural form

Design of continuous prismatic prestressed concrete spine beams with variable prestressing forces

Prediction of compressive strength

of concrete

Influence of linings on stress and deformation in rock around tunnels

Passive concepts for improvement of thermal and visual comfort in houses in Sri Lanka

An experimental method to determine the thermal conductivity of concrete

Internally stabilized earth retaining systems with discarded tyres

Mechanical Engineering

Chemical treatment of timber : a novel method

Performance analysis of pedestal fans : An experimental investigation

Design and construction of an ener-

gy efficient furnace for melting non-ferrous alloys in the local foundry industry

Knowledge based software for loading and stability of ships

An analysis of pelton turbines as related to mini-micro hydro applications

Electrical Engineering

An over current indicator

Evaluation of cost of unserved energy in Sri Lanka

Designing fuzzy logic damping controllers for large practical power systems

Energy conservation in industry: motor drives

Electronic and Telecommunication

Engineering

Improving the efficiency of electro discharge machining by dual voltage excitation

Optical characteristics of carbon based semiconductors

Designs of YAGI array receiving antennas using genetic optimization

Chemical Engineering

Application of membrane separation processes to the Sri Lankan industry

Cashew nut shell liquid based polymer resin for making air drying varnishes

Preparation and properties of starch xanthide encased powdered natural rubber.