
Editorial

Research is the Foundation of Knowledge

The above phrase was the motto inscribed in the insignia of the Natural Resources Energy and Science Authority (NARESA), the predecessor of the National Science Foundation. The basis for this maxim has been explained by the present writer in a report titled 'Sri Lanka Science and Technology Indicators', Part IV, published by NARESA in 1996, wherein the "research process" has been conceptually and diagrammatically conceived as an "input-output" activity. The inputs in this system mainly comprise, human resources, financial resources, physical resources (infrastructure), and science and technology information flow. These inputs facilitate initiation of scientific investigations, which are carried out through established pathways identified as 'Fundamental Research', 'Basic Research', 'Applied Research' or 'Experimental Development'. The first primary outcome of this activity is New Knowledge or New Information as postulated in the NARESA insignia, from which intermediary outputs are articulated as scientific publications, research reports, innovations, inventions, new insights, patents, postgraduate degrees, laboratory certification, as well as negative results. The final phase identified as commercialization of research takes place through a variety of pathways, considered to be the most costly and time consuming phase in research and development.

Observing the research system from a "Science Policy" perspective, the question that has been relevant for purposes of allocating resources, especially financial resources, was the proportion of time and effort devoted to Fundamental, Basic, and Applied Research, as well as to Experimental Development. Historically, commencing from the mid decades of the last century, the so-called developing countries were under formidable pressure from organizations such as UNESCO and the Commonwealth Science Council (CSC), to give priority consideration to science planning and policy

formulation, which were considered pre-requisites for national development. Consequently these organizations conducted extensive awareness and training programmes on science policy formulation with the intention of facilitating the integration of scientific considerations in national development planning. It is in this context that clear definitions of what could be considered as fundamental and basic research became relevant.

In some definitions fundamental research was generally identified with basic research and defined as "curiosity-oriented research", which leads to an increase in the stock of useful knowledge. However, for the purpose of international comparison UNESCO defined basic (or fundamental) research as any experimental or theoretical work undertaken primarily to acquire new knowledge without any specific application in view. According to these two definitions, basic research (or more appropriately Fundamental Research), may include for example, theoretical and experimental nuclear physics, space research, astro-physics etc., which can functionally probe the mysterious insights of natural phenomena, thereby widening the frontier boundaries of research disciplines. Such investigatory research however, may not be of vital significance to developing countries, and hence may be referred to as "Less Expedient Basic Research". On the other hand, exploratory studies such as those leading to the isolation, synthesis, and identification of active principles in biological materials, which are of great significance to the developing world, could be identified as "Expedient (or Strategic) Basic Research" or simply as basic Research. Such delineation was of great importance for allocation of scarce resources for research in developing countries, and in fact these were the broad conclusions of a 'policy dialogue' initiated by Commonwealth Science Council in the mid 1980's for science planners and science policy analysts of developing countries.

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