Mass to class in academic system

The debatable and frank admission by the HRD minister that higher education is a sick child and a simultaneous release of UNDP report that only seven to nine per cent of Indian graduates have employment capabilities, point to the current grim quality of academic scenario of India. The present higher academic scene displays a complete spectrum of institutions from a few world class institutions to a great majority of those which exist for namesake only. Surprisingly, this canvas is surviving admirably by fulfilling the need of users. Had this system, either in full or in part, lost its utility, it would have been ejected out of the greater national canvas. Yet this surviving system undoubtedly needs improvements or corrections for better performance; in totality and not in a piecemeal manner as practised presently. The multitude of issues that need immediate attention at institutional, individual and higher controlling levels are:

- Poor faculty quality and failure of UGC/CSIR NET tests to induct quality in the present academic system. Selection should be based on academic zeal and commitment even if relaxation of rules is required.
- Ways to increase the research output from academic institutions.
- Timely filling of vacancies.
- Enhancement of effective interactions between academic, scientific, technical and industrial organizations to address the issues emerging thereby.
- Regular inspection of academic institutions by competent authorities concerned and their interactions with all components of the academic system.
- Improvement in quality of academic leadership (VCs and principals), both at university and college levels.
- Working freedom to performers and ways to curb participation in non-academic activities by faculty.
- Inadequate lab and other infrastructural facilities and proper maintenance of existing equipment despite funds being available.
- Reform in too-much-time consuming examination system. Large number of holidays and no resistance to students strikes.
- Too much emphasis on numbers of papers written by faculty rather than on quality.
- Inferior quality books and guides.
- Proper database of field of specialization of faculty for evaluation of the output from the system.
- Government's tight control on promotion and appointment.
- Amalgamation of faculty of understaffed departments with leading departments either within the city or in the jurisdiction of university for proper faculty strength and facilities.
- NAAC accreditation to be made mandatory for every institution; repeatedly poor performing institutions to be closed down.

Higher education to all or to a few selected ones? This issue should be taken up with utmost sincerity. The result of the present open-door-policy is visible to everyone. The conventional education is opted by those who cannot afford the prohibitively high cost of professional education and are willing for white collar jobs. This class of students do not hesitate in moulding the system to suit their poor aspirations.

Is it feasible to enforce a uniform academic system on pan-India basis? Despite 60 years of independence, the country displays a mosaic of high heterogeneity in terms of culture, religion, ethics, economic progress, education and social development. The impact of education and electronic media has not made a deep impact on the psyche of the society which is at best superficial. To tackle the problem of the body fabric of nation, we may have to have two or three different systems of education to suit the needs of individuals or groups or regions with built-in exchangeability from one system to another, if one so desires.

The recent liberalization of higher education allowing opening of professional courses by private players is one such corrective measure that has opened up an opportunity to even an average student to pursue a course of his/her liking. This trend has created a big quality-void in conventional academics and the worst affected is the science stream. If this trend continues, a crisis will shortly emerge in getting competent manpower to man our institutions. To a considerable extent this situation is prevailing in recently established professional colleges where a good part of faculty comprises of fresh graduate students. Unfortunately, these fresh academicians lack commitment and do not hesitate to leave the academics the moment they get a lucrative offer from the industry or from elsewhere.

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Nutritional security through sustaining livestock in marginal environments

It is a known fact that the diet of people in marginal environments falls short of recommended dietary allowances (RDA) with respect to milk, vegetables and fruits, which most often result in malnutrition in poor population. Sustainable livestock production can be an effective strategy for providing easy access to nutritious food for nearly two-thirds of farm households in India who are associated with livestock production, with 80% of them being small landholders (≤2 ha). The high quality protein and micronutrients of livestock products (milk, egg and meat) benefit those groups that need it most – women and children. Therefore, sustaining the livestock sector, particularly in marginal environments, has more potential to reduce nutritional insecurity than a similar growth in the other sectors.

However, sustainable livestock production is contingent upon optimum utilization of available fodder resources and giving due importance to the quality of crop by-products in the R&D planning. In the Green Revolution era, the introduction of high yielding varieties (HYVs) of foodgrains distorted the grain-straw ratio in favour of grains, and straw of foodgrain crops – which is used as livestock fodder – received least attention in the process of varietal development. This led to shortage of feed and fodder. Presently, out of 55 resource development regions in India, 43 are fodder-deficit. It is paradoxical that more than 5 million tonnes of paddy straw (and some quantity of wheat straw) are destroyed by burning in the fields of Punjab which is a fodder-surplus region. Seasonal and spatial variation (up to 150%, as observed during discussions with the farmers) in fodder prices adds another dimension to this problem. Feeding livestock without chaffing the fodder results in about 50% fodder going waste. Effective institutional arrangements for use of available technologies would be useful to address fodder shortages in deficit marginal environments, thereby addressing the distressing problem of malnutrition among the poor population.

First, scientific ways of fodder conservation could be effective for augmenting fodder availability. Silage making (cost Rs 29.5 per tonne), fortification of dry roughages with urea (4% urea + 40% moisture) and compound feed mixture (50–60% straw + 35–40% leguminous fodder/tree leaves + 10–15% molasses), which can be densified to the extent of 350–400 kg/cubic m, are some of the techniques which add to the digestibility of roughages and require little storage space for fodder resources. Also, probiotics (microbial feed additives) improves the feed utilization capability of animals, thereby enhancing milk production and live body weight of animals. Therefore, scientifically formulated compound feed with selected and high-quality ingredients can help in mitigating fodder shortages during the lean season and increasing livestock productivity. The compound and compacted feed mixture is not only economical, but also requires less (6–7 times) space for storage and transportation. Location-specific institutional mechanisms for maintaining buffer stock (fodder bank) of compact fodder and bulk fodder purchase from surplus regions during peak production seasons should be established in fodder-deficit regions. The Government should play a facilitating role only in the establishment of such institutions.

Second, R&D focus in foodgrain crops is presently biased towards grain yield, paying little attention towards the fodder–grain ratio and quality of fodder. This often leads to non-adoption of even HYVs of food crops. For example, the high-yielding hybrid of pearl millet could not fully succeed in the dry regions of western India, where a locally adapted and highly succulent variety ('Sulkania') of pearl millet performed better in terms of its on-farm economic use. Similarly, presence of spikes in the straw of a wheat variety (Kundan) and prickly thorns on sugarcane leaves (CoJ 67 variety) affects their intake by animals. Therefore, incremental research resources should be allocated for developing nutritious, high-yielding and short duration varieties of fodder crops and HYVs of foodgrain crops, which provide higher grain and straw yield along with good-quality straw.

Finally, food security in itself does not translate into nutritional security. Sustainable livestock production in marginal environments is crucial for improving access to animal proteins and enhancing nutritional security for the poor. Therefore, efforts should be made for creating enabling institutional environments for wider adoption of scientific techniques for conservation of feed and fodder, and maintenance of buffer stock of compacted feed and fodder at local level. Local governance institutions or panchayats can play a significant role in this. It would also make a significant difference in ensuring reliable fodder supply for sustaining livestock whose output will in turn provide nutritional security to the poor and underprivileged population in marginal and fragile production environments.

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Conservation of endangered flora and fauna of Chilika Lake

The Chilika Lake on the Orissa coast is a natural brackish-water lagoon of marine origin bounded by lat. 19°28′–19°54′N and long. 85°05′–85°38′E, and has been designated as a Ramsar site since 1981. The water spread area of the lagoon varies from 1165 sq. km during monsoon to about 906 sq. km during pre-monsoon. It is a pear-shaped, semi-enclosed piece of pristine nature formed by a recurved barrier spit on a gently sloping coast. The lake provides livelihood to nearly two lakh people living in the vicinity.

The Chilika Lake is presently showing symptoms of environmental degradation. A constant inflow of silt amounting approximately to 13 million tonnes per year, due to soil erosion in the catchment area, is choking the mouth of the lake. Satellite images reveal that a 46 sq. km area has been silted up and this area is now infested with weeds and grasses. Another major cause of sedimentation of the lake is the macrophyte growth and its decay. The shrinkage has been calculated at 1.5 sq. km per year. Due to the decrease in salinity and excess nutrients from the silt, weeds have spread over approximately a quarter of the lake. Also, the lake has become an infinite and convenient receptacle for the waste generated by the growing population and the effluent industrial waste discharged into it.

The Chilika Lake also supports a large variety of microalgae, marine seaweeds, sea grasses, fishes and crabs that thrive in its brackish water. The value of marine algae as food and feed depends on their mineral contents. Agar yield in the Chilika Lake will be of special interest because of the occurrence of valuable agarophytes like *Gracillaria verrucosa*, *G. crassa* and *G. edulis*. Utilization of seaweeds would be worthwhile since they contain minerals, trace elements and