

Curricula of Chemistry for Economic Development of Sri Lanka

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In many important aspects of public life the term “quantity” is always given a predominant position whereas the term “quality”, applicable to the same aspect, is either ignored or not given adequate consideration in Sri Lanka. This is true for Education in general, especially the Education of

Chemistry in Sri Lanka. What is the quality of Chemical Education? Is it the adoption of curricula in the United Kingdom (UK) or the United States of America (USA) to Sri Lanka irrespective of whether they are relevant or irrelevant to Sri Lankan needs? Four decades ago, we were very proud that the curriculum of chemistry in our tertiary education system was comparable to that of UK. Simultaneously, we condemned the curricula of the tertiary education in India stating that they are of low quality not comparable with the curricula of UK. It is now realized that India adopted curricula relevant to her own needs but, according to our assessment they were considered to be of low quality because they were not comparable with those of UK. Now India has become the superpower of the region by teaching science relevant to her needs for several decades. Some aspects are, Green Revolution - Food Self-sufficiency; wheat productivity first in the world; White Revolution-with 14% of world milk output ranks # 1; Blue Revolution-remote sensing satellites; space applications; manned flight to moon in planning; Brown Revolution-leathers and leather manufactures; CAD MOD Europe (Fashion & Colours) Leadership; PARMA Supercomputer-In response to denial by USA, now a producer, User and Supplier, forcing CRAY into bankruptcy; Oceanography- First Pioneer Investor; Antarctica Expedition and Dakshin Gangotri Station; Atomic Energy-Research and Applications. The scientists in India are encouraged by the fact that the **Indian Science Congress** is **ALWAYS** inaugurated by the **Prime Minister of the Country**. The **Prime Minister's** vision is that India will become a Knowledge Superpower. The science education relevant to the Indian context is the main contributor for the above enormous achievements and the present strong economy of India in Asia. Did we achieve any significant development for being proud that our tertiary education is not second to that of UK? The irrelevant curricula in science education is the main cause for the present dependent economy of Sri Lanka. Even though we considered Indian curricula to be of

low quality about four decades ago, it was very clear that the chemistry curriculum was associated with the teaching of the fundamental principles in chemistry thoroughly with at least one application of each principle. The evaluation was based on testing the ability of the student to apply the principle to different situations which **has not been taught**. **The credit given at examinations** was on the merit of the ability to use the knowledge and not the ability to memorize the learnt materials. This is a difficult task for the examiners. However, it helped in the achievement of the present strong economy of India.

In Sri Lanka, less than 0.18% of the revenue has been allocated towards science and technology. Scientists and Technologists are produced by the Education system. Even if a greater percentage of the revenue is allocated as in countries such as India and Korea if the system of education is unable to produce **quality** scientists and technologists relevant to Sri Lanka (not to UK!) such an allocation would be futile. Therefore, the quality of education plays an important role in the development of Sri Lanka. What is the quality of education? A teacher is a person who transfers the knowledge (skill) to the student. It is the duty of the student to develop the ability to use the knowledge when the need arises. In the traditional method followed in Sri Lanka several decades ago as well as today, scientific principles are taught by application mainly to imaginary examples. The skill is developed by carrying out the laboratory work but the chemical principles are not frequently applied to laboratory experiments. It is essential to develop the ability to apply the scientific principles to laboratory situations and subsequently, to day to day life and industry. There is a dearth of personnel in Sri Lanka who possess this ability (less than 10 %) (“*scientific literacy*”). In the modern concept, a teacher is a facilitator who will guide the student to develop the so called “*scientific literacy*”. The teacher will facilitate the students to develop their skills which involve the ability to apply the knowledge when the need arises to real systems rather than the traditional imaginary examples. The evaluation process should be based on the award of credits to those students who develop the capability to apply scientific principles when the need arises in any aspects including the Industry.

We are also very proud in stating that during a certain period of the history of Sri Lanka there was a booming of the economy. Ancient Sri Lankans realized the importance of the conservation of water and constructed reservoirs (Wewa) to collect rainwater for subsequent use in irrigation and for other purposes.

These are not found in UK or USA. The first 'wewa' was constructed by King Pandukabhaya (310 – 380 B.C.) presently known as the Basavakulama Wewa at Anuradhapura. Since then about 30 thousand reservoirs have been constructed mainly to collect rainwater. Two main objectives in the conservation of water were (i) to provide water for irrigation during the dry season such that an uninterrupted agricultural activity with the production of food was maintained, (ii) to improve the health of the people by making the water available for domestic purposes. It seems that an economic prosperity of ancient Sri Lanka was dependent on the conservation and subsequent continuous availability of water for human needs. Do we have irrigation water quality in our teaching curricula? The curricula relevant

to UK and USA do not contain irrigation water quality since they are irrelevant to them. Since we copy UK and USA we also do not incorporate such areas into our curricula even though it is very relevant to us. If it is incorporated we consider that the curriculum is of low quality which does not match with that of UK and USA. This is one such example of our curriculum in the Education System. If we adopt a curriculum relevant to our needs even though it appears to be of low quality we may be able to achieve economic development after several decades. The low quality curriculum can be made to a high standard by adopting the teaching and the evaluation processes linked to produce students possessing good *scientific literacy* relevant to our needs.

Twenty Fifth Batch of Graduate Chemists pass out at the Fourth Convocation of the College of Chemical Sciences

The fourth convocation of the College of Chemical Sciences was held on the 15th of February 2008, at Cinnamon Grand Colombo. This particular convocation was a very important event in the recent history of CCS for many reasons.

The largest ever number of Graduate Chemists (52) passed out. They also represented the silver jubilee batch that completed the Graduateship programme in Chemistry. Further, this group had the largest number of students graduating with first class honours (07).

For the DLTC programme as well this convocation was a memorable occasion. We saw the largest number of diploma holders (47) passing out in the 33 year history of this programme.

We also had five Licentiate Chemists passing out for the first time. This was a consequence of the exit arrangement that was provided for the first time this year for students who were unable to qualify as Graduate Chemists. They pass out at a lower level as Licentiate members – a qualification that is normally available for 3 year B.Sc. graduates of universities.

For the first time in the history of the College, we had the participation of a representative from our sister body in the UK. Mr. Stanley Langer, the International Relations Manager of the Royal Society of Chemistry was the Chief Guest on this historic occasion and delivered the Convocation Address.

The Honorary Dean of CCS Prof. JNO Fernando in his address emphasized the new developments and achievements of CCS throughout the past academic year. Among such developments, the research component offered for the final year students as an option for the first time was highlighted.

The first research session of CCS took place at the PPGL Siriwardene Auditorium in association with the convocation on the next day. Prof. GMKB Gunaherath of the Open University of Sri Lanka was the Chief Guest and Mr. Stanley Langer was the Guest of Honour. Seven research papers based on the undergraduate projects conducted at CCS and in collaboration with other organizations were presented.

Cover page

The resource persons for the International Symposium on 'Innovations in Food Science and Technology and Healthcare for Social Well-being' scheduled to be held from 12th - 14th June 2008 at the BMICH (pages 9 to 11).

Some Graduate Chemists from the 25th batch of the Graduateship Programme in Chemistry (page 04).