

Science Education in Sri Lanka: Past and the Future

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The education in Sri Lanka has a history of over 2,300 years. Astonishing irrigation system built in the ancient time is the best evidence for how basic sciences and applied sciences were utilized in the country in the past. During the colonial era, Christian Missionary education system was introduced to Sri Lanka. British administration was very instrumental in establishing education in English medium. However, it was confined to rich people who spoke English representing the inequality of education. After the independence was gained, Dr. C.W.W. Kannangara introduced education reforms and established Central Colleges (Madya Maha Vidyalaya) by bringing fairness, equity and impartiality of education. The University system was established in Sri Lanka under the University Act No 16 of 1978 and the University administration was centralized by the University Grant Commission (UGC).

The Central colleges had facilities for basic science subjects as well as for other subjects. This reforms finally established the free education by emphasizing the importance of “Girls” education also. With the establishment of the Central Colleges, science education was strengthened by introducing basic sciences; Chemistry, Physics, Mathematics and Biology together with other non-science subjects.

Further education reforms were introduced to the Sri Lankan education system in 1972, 1998 and 2007. In 1972, the government introduced free textbooks, mid-day meals and limited curriculum reforms. The educational reforms introduced in 1972 further expanded the facilities and the quality of free education with the

introduction of English, Mathematics and science education to all schools.

After the reforms introduced in 1972, there was a drastic change from grade six to include ten subjects in the curriculum. Subsequently, the “National Certificate of Education (NCG) Examination” was conducted in grade nine; not in grade ten as in the old system. Introduction of Pragurthiya I and Pragurthiya II for this curriculum was a drastic change that introduced students to various types of vocational training. Then, qualified students were proceeded to the “Higher National Certificates Examination” which was equivalent to GCE (A/L) in the old system. In this curriculum, in addition to the four main-stream subjects, four additional subjects were introduced (8-subject curriculum). However, these changes did not exist more than a year due to the government change, and the new system was converted back to the old system (GCE A/L). If it were continued, it could have been one of the best educational reforms for sustainable development of Sri Lanka.

In late 2000 and onward, Project Work was introduced to the advanced level syllabi including science subjects. Nevertheless, it has never been successful due to various reasons such as students’ and teachers’ negative attitudes, dishonesty (downloading projects from the internet for submission), no contribution to A/L results and university entrance, and lack of a monitoring programme by authorities. Therefore, the main aim of students, teachers as well as parents in the current science-stream is to make professionals, mainly doctors and engineers. However, the importance of basic sciences for the development of the country was never emphasized. Findings of basic sciences are of utmost importance to establish applied sciences which has a direct impact on the development of the country. While other countries were moving forward with this direction, our country was lagging behind.

When we look back the continuation of the science education system over the past years, it has created very unhealthy competition for the limited resources of the

Sri Lankan Universities for producing above-mentioned professional degrees. With realization of this competition to get into the state universities, students were motivated to enter science-based faculties in the state universities. Consequently, applied research based on basic sciences was established which could contribute to economic developments. During this period, private universities came to the picture, but their emphasis was also on professional degrees and split programmes with overseas universities, and some are only steppingstones to link foreign universities for Sri Lankan students.

In order to support the research activities of state universities mainly science stream, funding was provided by HETC (Higher Education for Twenty First Century) and AHEAD (Accelerating Higher Education Expansion and Development) grant schemes. These are World Bank - funded Sri Lankan government-operation to support the higher education in Sri Lanka. These grants were awarded within the period 2013 – 2017 for researchers before the economic turmoil in Sri Lanka.

In the recent past, new science subjects were evolved, such as Data Science and Biomedical Sciences. The latter one is inherently interdisciplinary in nature. Biomedical Science provides the basic sciences necessary for medicine and allied sciences. Until recently, these basic sciences were never appreciated, but not anymore.

Although Sri Lanka performs high in internal efficiency of the current education system, the external efficiency is low due to heavy academic and examination-oriented education system. This examination structure has created very unhealthy, inefficient school system and education as witnessed today. What dominates today is out of school, tuition-based education which never addresses student's skills. For example, even grade 10 students do not regularly attend schools, and the attendance of advanced level students is out of the question. Ultimate result of this system is that it has neglected development skills of students, a mandatory aspect for development of a country.

In 20th century, many developed countries, including USA, Finland and Canada, adapted the skills-based education system and succeeded the development of their countries. Now, being in the 21st century, different socio-economic conditions are prevailed and hence education reforms must be made accordingly. The learning framework of the 21st century demands generic

skills as a learning outcome. This means that the subject contents including science subjects should involve IT and media skills, critical thinking skills, collaborative and communication skills, and creativity. Furthermore, teacher-centered classroom-based teaching should be replaced with student-centered out of classroom-based leaning. However, how much of these objectives can be achieved within Sri Lankan education system?? especially in the science education sector?

There are many things to be considered: Regardless of the 21st century outcome-based teaching and learning process, students must face highly competitive GCE (A/L) examination in the science stream to secure a place in state universities. This would not be a problem if there are enough universities as in developed nations where students can enroll by paying relevant tuition fees. Nevertheless, in the Sri Lankan context, majority of students who are successful in GCE(A/L) examination would not be able to afford to do this. Furthermore, Public schools must be granted enough money to do student- centered leaning at least in the advanced level (Science stream). These issues must be addressed for achieving 21st century education reforms in par with developed nations.

However, at present, we need to have a country where law and order prevail, and corruption-free good governors to run the country. It will then be possible to come out of this economic turmoil and think about the education reforms which would fit the best for our country.

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Message from the President

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Aims and Objectives of the Institute of Chemistry Ceylon: Further Steps in the Year 2022 and beyond.

It is indeed a great pleasure to issue this message to the Web site of the Institute of Chemistry Ceylon at a time when we have commenced several programs for the benefit of the professional chemists and chemical industry and to contribute to the achievement of Sustainable Development Goals (SDGs) of the United Nations. During the past, it has been possible to do much work towards most of the aims and objectives of the Institute of Chemistry Ceylon as laid down in its Act of Incorporation. However, some of them are yet to be achieved or they are in different stages of progress. I wish to address a few more of them during this year onwards with the cooperation of the State sector and the private sector as well as the relevant national and international organizations.

Initiative for enhancing status of the profession of Chemist

On the important requirement of enhancing the status of the profession of Chemistry in Sri Lanka, we have not yet been able to take necessary steps to make the registration of Chemists and the Accreditation of Chemical laboratories mandatory, although several activities in this direction were in progress during the

past. We are aware that, Malaysia is one of the countries in which such legislation has been already enacted. It is necessary to increase awareness on this matter amongst the policy makers so that, we can make a distinct and positive contribution to enhance the professional status of our Chemists and the profession of Chemistry in Sri Lanka. As a novel approach toward this objective, I have taken action in June 2022, to establish a National Secretariat under the Institute of Chemistry Ceylon. The Secretariat thus formed will be responsible for the Professional Practice of Chemistry which covers the performance of a service related to public interest, public safety, and legal or regulatory matters.

As a further step towards enhancing the status of profession of Chemistry in Sri Lanka, relationship with the industrial sector will be developed through effective communication systems with the industry, assisting to solve their subject related problems and encouraging the industry for research and development with the involvement of the College of Chemical Sciences (CCS) and the Institute while organizing a suitable platform to discuss industrial issues and find solutions.

Advancements in the Educational Arm

In addition to the already existing globally recognized and most demanded professional Graduateship in Chemistry (GIC) program of the Institute, and with a view to promoting education in Chemistry at all levels and to promote encourage and foster original research in Chemistry, the BSc (Hons) Degree program in Chemical Science was introduced in 2020. This BSc (Hons.) program is accredited by the University Grants Commission (UGC), and the Institute now operates its second year. The program has shown a growing demand already, having 37 students in the initial year of 2020, and more than 200 in the subsequent year (2021).