RE-IMAGINING EDUCATION IN SRI LANKA

Vol II - Core Group Reports

PRESIDENTIAL TASK FORCE
ON SRI LANKA'S EDUCATION AFFAIRS

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இலங்கையின் கல்வி விவகாரங்களுக்கான ஜனாதிபதி செயலணி
PRESIDENTIAL TASK FORCE ON SRI LANKA'S EDUCATION AFFAIRS

TRANSFORMING THE PRESENT SYSTEM OF GENERAL EDUCATION TO A DYNAMIC AND VIBRANT PARADIGM FOR 21ST CENTURY

Report on Reforming Pre-school and General Education System in Sri Lanka

Submitted to the President's Task Force on Education Affairs

JULY 2020

CHAPTER 1

INTRODUCTION

Core Group and Functional Committee of the President Task Force was assigned to identify current issues concerning all aspects of pre-school and general education, critically review its effectiveness in the context of 21st Century needs and develop reform proposals to improve its quality and effectiveness to increase its contribution for the socio-economic development of the country. Hence, this report aims to study the present pre-school and general education systems in Sri Lanka and formulate appropriate proposals to reform it to be submitted to the President's Task Force on Education Affairs.

According to UNESCO, "Education that is designed to develop learners' general knowledge, skills and competencies and literacy and numeracy skills, often to prepare students for more advanced educational programmes at the same or higher ISCED levels and to lay the foundation for lifelong learning. General educational programmes are typically school or college based. General education includes educational programmes that are designed to prepare students for entry into vocational education, but that do not prepare for employment in a particular occupation or trade or class of occupations or trades, nor lead directly to a labour market relevant qualification" (UNESCO)

In the context of the education system practiced in Sri Lanka, general education refers to formal education offered at primary and secondary levels by the government schools, private schools and other educational institutions. However, for the better interrelationship of a child's personal development at different levels, pre-school education also is included in the report.

Formal education occurs in a structured environment where the explicit purpose is teaching and providing learning opportunities for the students. Usually, formal education takes place in a school environment with classrooms of multiple students learning together with a trained, certified teacher of the subject. Most school systems are designed around a set of values or ideals that govern all educational choices in that system. Such choices include curriculum, organizational models, design of the physical learning spaces (e.g., classrooms), student-teacher interactions, assessment methods, class size, other educational activities, and so forth.

Pre-school/ Early Childhood Education is designed to support early development in preparation for participation in school and society. The programmes are usually designed for children below the age of 3 years. Preschools provide education from ages approximately three to five when children enter primary education.

Primary (or elementary) education consists of the first five years of formal, structured education. They are typically designed to provide young children with functional literacy and numeracy skills and a solid foundation for most areas of knowledge and personal and social development to support the transition to secondary school.

Secondary education comprises the formal education that occurs during adolescence from Grade 6 to 13. Secondary education aims to give common knowledge, prepare for higher education, or prepare students for a profession.

Sri Lanka is a country with a proud history of free education from the primary level to higher education including university education. However, even now, the following common issues can be seen in the overall education system.

Common Issues in General Education

- Heterogeneity of the school system in terms of school-based student population;
- Unequal distribution of resources (physical/ human) between the schools;
- Inadequate continuing professional development opportunities for teachers;
- Written examinations driven nature of curriculum and testing;
- Lack of professional and social skills among the majority who completed general education;
- Lack of good citizenship qualities;
- Lack of creativity and innovative abilities;
- Poor understanding of students on cultural diversities and international affairs; and
- Deficiency in communication including fluency in international languages/world languages.

In this context, these proposals are presented to suggest broad national policies and operational level solutions to overcome the above issues and concerns in the pre-school and general education system. Hence, the paper includes vital guiding principles, and the methodology adopted in preparing the relevant policy framework and proposals for reforming the system.

Key Guiding Principles for General Education

- A schooling system which promotes equity and ensures equal opportunities for all.
- Achieve excellence in education by providing a high quality teaching and learning environment.
- All students become successful and confident learners with creative abilities. there should be an increased focus on skills development in addition to imparting subject knowledge (equipped with 21st century skills). This could include a focus on cognitive and non-cognitive skills, especially socio-emotional skills - specifically those that instill and promote respectable/ decent practices of social behavior.
- Appropriate use of new technology including digital/ online learning technologies. It would be good to discuss both the opportunities provided by education technology and their limitations. All students acquire skills in the appropriate use of new technologies including digital/ online learning technologies. Norm-based provision of such technologies that ensure equity in access for all students to technology.
- Need for an integrated approach across the entire education system, including preschool, general, vocational and university education. (The Sri Lanka Qualification Framework may be used as a basis in this context).

POLICY FRAMEWORK OF THE PRESIDENT ON PRESCHOOL AND GENERAL EDUCATION

SECTORAL POLICIES AND POLICY COMPONENT 1:

A society endowed with knowledge

Strategy:

Introduction of uniform curriculum system

Activities:

- Enhance the quality of education from preschool to the tertiary level in par with international standards
- Bring all institutions under one umbrella
- Change school curriculum to increase focus on formative assessments

SECTORAL POLICIES AND POLICY COMPONENT 2:

Re-awakening of School Education

Strategy 1

Quality Improvement

Activities:

- Introduce new scientific methods for university admissions based on the school rather than the district quota.
- Test IQ level at grade 6 and guide to higher studies according to their acquired skills and inherent skills.

Strategy 2:

Teacher Training and Professional Development

Activities:

- Convert existing eighteen (18) National Colleges of Education as University faculties.
- Create one close service by combining teachers, principals, teacher instructors and education administrative officers.
- Make legal provisions enabling teachers to transfer between National Schools and Provincial Schools.

Strategy 3

Infrastructure development in the school system

Activities:

- Provide infrastructure facilities with modern technology and required human resources to rural schools.
- Introduce the cluster school system by upgrading three schools per Divisional Secretariat Division.
- Establish twenty, trilingual, model secondary national schools island wide within the first two years.
- Develop primary schools into "Child-Friendly schools" and provde sufficient human resources.
- Establish school transport service for students and teachers under the PPP model.

(National Policy Framework Vistas of Prosperity and Splendour-2019)

PRESENT STATUS OF SCHOOL SYSTEM

In Sri Lanka, the school system comprises 10,175 Government Schools while there are 81 government-approved private schools (GAPS), 749 pirivena, and 25 special schools (for children with special needs). In addition, around 300 'international schools registered under the company registration law are functioning throughout the country. The total student population of Government schools rises to 4,214,772, while 247,334 teachers serve in these schools.

Government's official schooling span is 13 years (5 years of primary, 4 years of junior secondary, 4 years of senior secondary). Official school age starts at Age 5+, and compulsory education regulations are up to ages 5+ to 16 years, which means from Grade 1 up to Grade 11. According to the statistics, 88%+ students survive up to Grade 11 from a particular student cohort progressing from Grade 1, which is a significant achievement compared to many other developing countries.

Among the 10,175 schools, there are 4,059 primary schools only with Grades 1 to 5, while 3,227 schools teach students from Grade 1 to 11. Schools with AL science streams are confined to 1,044, and there are 1845 schools with ALs in other streams (arts, commerce) but without a science stream. AL Technology stream is available in both these types of schools, and the number has risen to 510.

The statistics show a serious bipolarization of the schools in terms of the student population. On the one hand, there are around 3,000 schools currently having less than 100 students, and nearly 1,500 of them have less than 50 children in each. On the other hand, the number of schools with more than 750 students is only 1,207, and a small sub-set of these schools have more than 3,000 students each.

The education system implements a national curriculum, and General (school) education is a subject devolved to the provincial authorities. However, the provincial authorities are expected to adhere to the national education policy, thus implements the national curriculum. The school system has three main national examinations, Grade 5 scholarship examination, GCE OL, and GCE AL examinations at Grade 11 Grade 13, respectively.

Table 1 below depicts the learning facilities available in the schools.

No of OL labs, ICT Labs and Language labs 2018 by province

Province	No of OL labs	No of ICT labs	No of Language Labs
1. Western	588	1043	134
2. Central	513	932	155
3. Southern	619	747	110
4. Northern	398	562	91
5. Eastern	532	782	104
6. North Western	544	624	127
7. North Central	402	524	83
8. Uva	430	464	88
9. Sabaragamuwa	428	682	113
Total	**4454**	**6360**	**1005**

Methodology adopted

The following main methods were used to collect relevant data and information in compiling this report:

- Review of previous reports on educational reforms;
- Review relevant literature on educational practices adopted in selected countries;
- Virtual meetings with Core Group and Functional Committee members on general education;
- Collect views of FC and CG members through a structured questionnaire; and
- Secure views and comments from stakeholders through consultation sessions with provincial and zonal directors, school principals, teachers, parents and other stakeholders (briefly)

CHAPTER 2

PROPOSALS FOR REFORMS

Declare a national policy on the overall education system, including their broad goals, with specific policies for pre-school, general, vocational, and university education sectors considering their broad goals.

2.1 National policy statement for general education

INTERNATIONAL EXAMPLES OF EDUCATION POLICY

Singapore Motto on education policy is

"Thinking Schools, Learning Nation"

Japanese Education Policy:

"Today, nations in the world are more and more interdependent. If they are to develop together it is necessary that each nation learn about the history, culture, customs and value systems of other nations and strive for mutual understanding" (Ministry of Education, Japan, 1993)

Education policy refers to the plan and underlying principles for educating students. The goals of educational policy have evolved in the United States as society and culture have changed, and are continually being debated and revised.

Over time, the following have all been goals of public education:

- to prepare children for citizenship
- to cultivate a skilled workforce
- to teach cultural literacy
- to prepare students for college
- to help students become critical thinkers
- to help students compete in a global marketplace

National education policy in Australia is;

As a Nation Australia values the central role of education in building democratic, equitable and just society - a society that is prosperous, cohesive and culturally diverse, and that values Australia's indigenous cultures as a key part of the nation's history, present and future.

Goal 1: Australian schooling promotes equity and excellence.

Goal 2: All young Australians become

- Successful learners
- Confident and creative individuals
- Active and informed citizens

The above international examples and broad national development goals shows the need for a national policy statement for general education to be formulated.

Proposed policy motto for Sri Lanka is as follows:

"CREATIVE SCHOOLS, ENLIGHTENED NATION"

Definition of Enlightened:

(Informed, aware, liberal, reasonable, educated, sophisticated, refined, cultivated, open-minded, knowledgeable, literate, broad-minded, wise) *Collins Thesaurus of the English Language – Complete and Unabridged 2nd Edition. 2002 © HarperCollins Publishers 1995, 2002.*

- After the formal acceptance of the policy statement by the government, recommend that H.E. the President declare this as the national policy statement (Hon. Prime Minister of Singapore has declared such a statement.)
- Key Elements of the Policy:
- Dedicated to achieving development goals
- Endeavor to practice peaceful coexistence among all religious and ethnic groups
- A disciplined society with democratic values

Pledge to the Nation

Issues:

- The non-availability of a pledge to the nation to recite at the schools is a significant drawback concerning the development of social integration and sense of devotion to the country.
- Although children recite the national anthem, it does not seem to help inculcate the nation's feeling of pride in the minds of children.

Proposals:

- Appoint a committee of experts to prepare a pledge to the nation. The committee should comprise of representatives of three main ethnic groups (Sinhalese, Tamil, and Muslim).
- The pledge to the nation also may focus on nation-building, ethnic harmony, and respect to all, and also adhering to principles of human rights and dignity and maintaining discipline in the society. It should be recited in all schools daily in the morning before the schools begin the sessions.
- The pledge to the nation may be extended to other sectors, eventually including the public service and armed forces and so forth.
- Some examples of a pledge to the nation used by other countries including the US, India, and Singapore are given in below:

PLEDGE TO THE NATION (EXAMPLES)

United States of America

"I pledge allegiance to my Flag and to the Republic for which it stands one Nation indivisible, with Liberty and Justice for all."

India

The National Pledge is an oath of allegiance to the Republic of India. It is commonly recited by Indians in unison at public events, especially in schools, and during the Independence Day and Republic Day celebrations. It is commonly found printed in the opening pages of school textbooks and calendars. It is recited in the morning assembly of most Indian schools. However, Pledge is not part of the Indian Constitution.

The Indian National Pledge is commonly recited by Indians at public events, during daily assemblies in many Indian schools, and during the Independence Day and Republic Day commemoration ceremonies.

"India is my country. All Indians are my brothers and sisters. I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it. I shall give respect to my parents, teachers and all the elders, and treat everyone with courtesy. To my country and my people, I pledge my devotion. In their wellbeing and prosperity alone, lies my happiness".

Regional translations in all major languages available.

Singapore

The Singapore National Pledge is an oath of allegiance to Singapore. It is commonly recited by Singaporeans in unison at public events, especially in schools, in the Singapore Armed Forces and during the National Day Parade.

From August 1966 onwards, students began reciting the National Pledge before the start of each school day. The National Pledge has been recited during National Day occasions, the National Day Parade and school assemblies. The original English text was also translated into Chinese, Malay and Tamil.

According to the late S. Rajaratnam, the Pledge emerged against the backdrop of a vital struggle to forge a sense of nationhood and build "a Singapore we are proud of". He believed that language, race and religion were potentially divisive factors and used the Pledge to emphasize that these differences could be overcome if Singaporeans were united in their commitment to the country.

National Pledge is:

English version

"We, the citizens of Singapore, pledge ourselves as one united people regardless of race, language or religion, to build a democratic society based on justice and equality so as to achieve happiness, prosperity and progress for our nation."

2.2 Pre-school education

Current issues

Subject oriented teaching, administering of many written tests, untrained teachers, non-availability of professional development programmes for teachers, non-availability of a uniform management system and salary structure for teachers and required facilities. are the main issues in the pre-school education.

A child's experience between birth and age five has a significant impact on his/her future. The physical and mental development of children rapidly takes place during the early years. Pre-school education should promote teaching and learning to ensure children's 'school readiness' and give the children a broad range of knowledge and skills to provide the right foundation for good future through school and home environments. It is crucial to develop an appropriate system to set the standards that provide a substantial base to ensure that children learn and develop well and are kept healthy and safe.

In Sri Lanka, pre-school education is provided by various entities, including Government, provincial authorities, Semi-Government, NGOs, and the Private Sector. Different curricula are also in place in these pre-schools such as Montessori, Pre School, and the like.

Proposals

- The main purpose of preschool education should be to provide opportunities to the child to develop his/her preparedness to work with peers, socialization, adopt basic etiquettes and to ensure that child is ready for primary education as a pre-primary stage of education.

- Inclusion of pre-school education under the Ministry of Education, adopt a coherent policy/ action plan on pre-school education, in collaboration with the Ministry of Women and Child Affairs.

- Implementation to be delegated to Provincial Education Authorities develop a uniform syllabus including basic language and numerical literacy, developing a social relationship with peers, provide professional training for the teachers, adopt a uniform salary structure for preschool teachers. Provision of other required facilities.

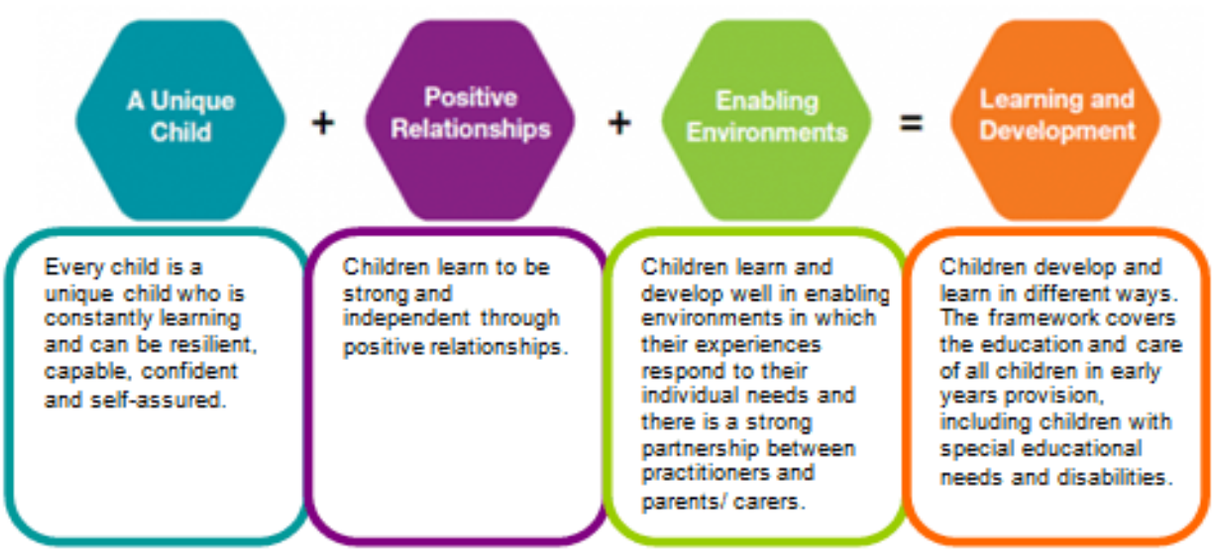
- Ministry of Education should formulate a learning framework for preschool education, develop guidelines on the training of preschool teachers and monitoring the implementation.

- Responsibilities of early childhood development assigned to the Ministry of Children's' Affairs and coordination of preschool education to the Ministry of Education.

- It is important to design a uniform framework with national standards on pre-school education that cater to our education system's needs. The pre-school framework can be designed using some experience from the pre-school education practiced in other countries, such as, 'The Early Years Foundation Stage (EYFS) framework' in the UK, which supports an integrated approach to early learning and care. The EYFS framework is based on four overarching principles: preparing a **unique child, positive relationships, enabling environments and learning and development.**

- Unlike a set curriculum, the framework provides the structured standard for promoting the learning, development, assessment, and safety of children in communication and language, physical development, and personal, emotional, and social development. Such a framework will give all professionals and institutions a set of common principles and commitments to deliver quality early education and provide childcare experience to all children. It will also provide the educators the freedom to develop their curriculum, which takes into account the unique needs of the students, but within the set guidelines so that students throughout the country will be provided with similar opportunities to develop skills needed for the child. The following diagram depicts the key characteristics of a child at the preschool level.

Diagram 1 - Child in Preschool Level



- Establish specific qualification guidelines for pre-school teachers in line with NEC and NIE recommendations.

- Implement training programmes for pre-school teachers: Teachers should also be trained to provide for the protection and wellbeing of children, developing their personal and social skills, as well as ensuring the inclusivity of children with special needs. Teachers should be made competent to develop learning situations in conformity with curriculum guidelines.

- It is recommended that Pre-school learning goals are structured under 6 key learning areas:

i. Aesthetics and creative activities

- Enjoy art, music, and movement activities.
- Express ideas and feelings through art, music, and movement.
- Create art, music, and movement using experimentation and imagination.
- Share ideas and feelings about art, music, and movement.

ii. Discovery of the world

- Show an interest in the world they live in.
- Find out why things happen and how things work through simple investigations.
- Develop a positive attitude towards the world around them.

iii. Language and Literacy

- Listen for information and enjoyment.
- Speak to convey meaning and communicate with others.
- Read with understanding and for enjoyment.
- Use drawing, making, symbols and writing (with conventional and invented spelling)
- Communicate ideas and information.
- Have an interest in learning their Mother Tongue Language (MTL).
- Develop foundational MTL language and literacy skills.
- Be aware of local ethnic culture

iv. Motor skills development

- Enjoy participating in a variety of physical activities.
- Demonstrate control, coordination, and balance in gross motor tasks.
- Demonstrate control and coordination in fine motor tasks.
- Develop healthy habits and safety awareness at home, school, and public places.

v. Numeracy

- Recognize simple number patterns and relationships in order to use them, such as matching and sorting.
- Use numbers in daily experiences.
- Recognize and use basic shapes and spatial concepts in daily experiences.

vi. Social and emotional development

- Develop an awareness of personal identity.
- Manage their own emotions and behaviors.
- Show respect for diversity.
- Communicate, interact, and build relationships with others.
- Take responsibility for their actions.

2.3 Primary Education

The primary education is vital as the first stage of formal education. However, the following issues need addressing with due consideration to the age and mental and physical growth of the children.

Issues

- Lack of opportunities for the child for learning with joy and enjoying the childhood as heavy subject content is entrusted

- The present focus on the Grade 5 scholarship examination and its consequences cause the children of primary stage a highly stressful situation due to overemphasis given to prepare them for the Grade 5 scholarship examination by the schools and the parents.

- Grade 5 Scholarship Examination consists of Paper I (Based on 14 essential learning competencies to measure IQ) and Paper-II (based on the syllabus). The data analyses of this examination every year shows that this examination behaves well on par with the normal distribution. (www.doenets.lk). According to the

Department of Examinations, the issue is NOT the examination content but the competitive nature in the society to gain entrance for the children to a popular school. The vacancies in classes in popular schools are filled to the maximum in grades 2, 3, and 4. Then there will be limited vacant seats to enroll children who pass the Grade 5 Scholarship Examination. Therefore, the cutoff mark goes up to 180s and 190 s. This problem must be addressed.

- Upgrade most schools around the country with necessary physical and human resources and provide more opportunities to enroll the students for them.

- The primary school curriculum should provide all children with learning opportunities that recognize their strengths and develop their full potential.

- The curriculum should be designed on a thematic approach inclusive of the right weight to key subjects such as mathematical foundations, development of skills, and character development. Accordingly, each school day will provide opportunities to learn core subjects and foundation subjects and enrichment activities such as play, sports, clubs, and societies during afterschool hours.

- A large number of teachers are not adequately trained in primary education

- Lack of social interactions and sharing the activities with peers and others

- Inadequate awareness of the parents about the fundamental purpose of primary education and unwarranted involvement in the process

- Inadequate acquisition of basic knowledge and skills including essential subjects, reading, writing, and speaking skills, especially in language literacy and numeracy, social skills including opportunities for learning the environment and society, social acquaintances and the like.

- Lacuna for activity-based, child-centered education that leads children for rote learning with less physical activities.

- Lack of attention paid by the schools and parents over preparing children for healthy dietary habits and a healthy lifestyle as a part of the education.

Proposals

- Recognize all students as having unique talents and abilities

- Provide more opportunities for all students to engage in creative work. More opportunities for self-learning and to spend the childhood as a child. The present system of rigid focus on subject learning should not snatch the childhood

- Scholarships to be awarded for talented and needy students based on a simple test to be held at Grade 5 and continue with secondary education uninterrupted. A learning support grant can be provided to the children in low-income families from grade 1 onwards, may be combining with family-based subsidy grants.

- A simple test using emotional intelligence, general ability/ aptitude paper, and a paper to assess Essential Learning Competencies be conducted. The examination should be less stressful for children. Only those children from families below the designated income level should apply for the examination. (The test should strictly be aimed at identifying outperforming students of low-income cohorts given that all ethical aspects be secured, and their dignity is assured).

- A separate simple test may be conducted by the educational authorities to select children for admission to secondary schools. It is essential to develop 1000 secondary schools with all required physical and human resources. This should reduce the parent's competition to admit their children to so-called "popular schools." Replace the Grade 5 scholarship examination with a suitable admission test to be administered by educational authorities for admitting children to secondary schools.

- Recognition, motivation, and incentives for Primary teachers and principals on par with secondary schools is essential. Principals and teachers of primary schools are not given due recognition compared to secondary school staff. Salary structures and other benefits that are given to primary staff should be upgraded to motivate them to work more efficiently and effectively.

- Recognition towards primary teachers and principals, especially those serving in rural, challenging locations should be accorded with an additional financial incentive and evaluation system to count on in their performance appraisal schemes, transfers, and promotions.

THE QUALITY OF THE TEACHERS

The quality of teaching matters a lot in Primary Education. The teachers who teach grade 5 should be qualified to teach primary students. They must be trained to teaching especially primary students. Most primary teachers have come from the Arts stream. The students who followed Science, Commerce, and Technology streams also should be allowed to be trained as a primary teacher.

- The primary school curriculum should provide all children with learning opportunities that recognize their strengths and develop their full potential. The curriculum should be designed on a thematic approach inclusive of the right weight to key subjects such as mathematical foundations, development of skills, and development of character. Accordingly, each school day will provide opportunities to learn core subjects and foundation subjects and enrichment activities such as play, sports, clubs, and societies during afterschool hours.

- It is suggested raising the proficiency level of English in addition to the learning of the first language and second national language, Mathematics, Science and ICT as core subjects.

- Also, the value systems of each religion are important; thus, multi-religious education would help children be aware of the principles of other religions so that they respect others. Hence, it is worth to include a subject on comparative religion and value education. The main principles of key religions should be taught to all children from Primary to secondary levels. Also, value systems of each religion are critical thus multi-religious education would help children to be aware of the other religions so that they respect others.

- Learning of respective religions by all students should be made compulsory and be taught at Sunday schools.

- Sri Lanka also should look at building religious and ethnic harmony through social cohesion among students from a very young age. This should begin at the school, and it is essential to establish more mixed schools with multi-ethnic children.

HAPPY ROOM (SOUTH KOREA)

In primary schools in South Korea, there is a room with many toys like mini vehicles, puzzles, maize, gadgets with nuts and bolts. This room is called the "Happy Room." Children are allowed to play using them. They experiment, work with a partner, help each other, and enjoy their time, their fingertips get lots of exercises, a lot of stimuli for their brain.

- The Singapore primary education system seems to be the foundation of character building to make a good citizen with a good personality when the child leaves school. This is a good example to think about when we reform our primary Education.

DESIRED OUTCOMES OF EDUCATION - SINGAPORE

At the end of Primary School, pupils should:

- Be able to distinguish right from wrong
- Know their strengths and areas for growth
- Be able to cooperate, share and care for others
- Have a lively curiosity about things
- Be able to think for and express themselves confidently
- Take pride in their work
- Have healthy habits and an awareness of the arts
- Know and love Singapore

2.4 Lower/Junior Secondary

- This is typically a time when young children undergo profound transitions in their physical, psychological, intellectual, and social development, as they leave childhood behind and prepare for adult responsibilities. These years are critical for maturation as children's roles in school and society change.

- At the Lower secondary stage, students obtain a basic level of knowledge and skills considered necessary for adult life and set the foundation for their further studies in the academic and/or vocational routes.

- The curriculum should strengthen the technical and vocational fields, including life skills, too, during this stage to promote linkages with the country's socio-economic development. Therefore, it is vital that they are exposed to a range of academic and vocational courses at this stage. Students should be exposed to STEAM Education, AI, Robotics and others. If they have not been exposed before at primary level.

2.5 Upper/Senior Secondary

- The curricula at this stage should allow the development of understanding the overall context while at the same time avoiding repetition, ensuring students are engaged and inspired to develop their knowledge and skills.

- Examinations come into play at this stage. However, examinations should be used to discover the extent of what the children know and understand, and not scrutinize what is unknown. At times, Sri Lankan exams, tend to be inconsistent as they appear to depend on the paper setter and examiner. Question items should be designed to explore the process of learning and the student competencies and not to only measure memory and comprehension. It is necessary to assess students' analytical, creative, and innovative skills.

- At O/L, students should be exposed to a variety of subjects; academic and vocational, to focus and narrow down at A/L. Overall, education should be considered as a pyramid. At the lower levels, a broad exposure should be given. As they progress in life, they tend to specialize. Reducing weightage on examinations should not be considered as a mechanism to simplify education, but formative assessment should be strengthened to bring in more variety and excitement.

- Back in 1972, an attempt was made to make secondary education more application-oriented by adding a mandatory pre-vocational course at the junior secondary level. The reforms also sought to distance Sri Lanka from the traditional British education system by renaming Ordinary level (O-level) and Advanced level (A-level) examinations and "localizing" the content. Science, social studies, and mathematics courses were introduced for students in all streams from Grade 6 onwards. Eventually, however, the subsequent government reverted to O/L and A/Levels and made the pre-vocational course optional. It is worthwhile to re-visit such curricula that were designed to provide vocational skills and to be job oriented.

- The most critical aspect at this stage is to make the senior students realize the value and importance of their school experience. Today, the senior students are heavily influenced by the tuition industry, which leads to poor attendance in school and as a result, the students are unable to gain school life experience fully. To achieve this, and prepare them for the changing world trends, it is necessary to think of new assessment modes in addition to the traditional examinations, where testing may be entrusted to the respective individual schools.

- An example would be to introduce assessments in the lines of a 'Skills Passport' at A/L that include aspects such as Community/social Service, Co-curricular activities, Sports, Work/entrepreneurial Experience., where the school is required to assess and mark. If the Skills Passport is made compulsory for University entry, the students will realize the importance of regular attendance in school. Further, they will also give due attention to the important aspects of developing their personality, which is not being thoroughly investigated at present.

- A good example of this is the Duke of Edinburgh Award, a non-competitive programme that encourages students to develop positive skills and life habits that would assist them in life after school.

- In the senior secondary stage, formative assessments of which the scores will be recognized at the final summative examinations are essential to promote the acquisition of competencies.

- For a country such as Sri Lanka, where education provides an essential avenue of social mobility (through access to employment), we cannot ignore employability as an important outcome of education. This form is for individuals to climb up the economic and social ladder. The second form is to go beyond the skills and competencies required by the labor market. The emphasis here will be on conceptual clarity and application of learning to real-life situations, rather than rote memorization of facts and ideas. The second form leaves more room for exploration, experience, and reflection. The proposed reforms seek a balance between these two forms. A system of education that harnesses all forms of human intelligence must start from early childhood. Primary and secondary education, as the effectiveness of applying correctives to the pathologies indicated earlier, diminishes as the student grows up and becomes more set in their ways.

DESIRED OUTCOMES OF EDUCATION - SINGAPORE

At the end of Secondary School, pupils should:

- have moral integrity
- believe in their abilities and be able to adapt to change
- be able to work in teams and show empathy for others
- be creative and have an inquiring mind
- be able to appreciate diverse views and communicate effectively
- take responsibility for their own learning
- enjoy physical activities and appreciate the arts
- believe in Singapore and understand what matters to Singapore

- In countries such as Singapore, at the end of Secondary school, an autonomous, creative, and collaborative learning is promoted while producing a patriotic Singaporean citizen. This is a good example to think about when we reform our secondary Education.

DESIRED OUTCOMES OF EDUCATION - SINGAPORE

At the end of the Collegiate Level, (Leaving School) pupils should:

- have the moral courage to stand for what is right
- be resilient in the face of adversity
- be able to collaborate across cultures and be socially responsible
- be innovative and enterprising
- be able to think critically and communicate persuasively
- be purposeful in pursuit of excellence
- pursue a healthy lifestyle and have an appreciation for aesthetics
- be proud to be Singaporeans and understand Singapore in relation to the world

When students leave school, their personalities are built to be independent. The students are critical thinkers and innovators. This is a good example to think about when we reform our Collegiate Level Education.

LEARN TO APPRECIATE OTHERS TALENTS

There are individual differences in students. Some are good for academic work, good for sports, and some have various unique skills. Unfortunately, we have the habit of appreciating only academically bright students in schools. Through various activities like guiding/scouting, sports, drama, choir, orchestra, cadetting, debating, students should be taught how to appreciate others' talents from a young age.

2.6 Curriculum Development and Revision

- Teaching and learning in the 21st century should take a holistic approach to education. Though the intentions of the past reforms in Sri Lanka have been useful, it can be observed that each time, the content of the curriculum has increased without much improvement in quality. It is necessary to understand that the curriculum is highly complex and comprehensive and requires all authorities to offer good quality continuous professional development to all teachers.

- The report compiled by the Sri Lanka Institute for the Advancement of Education points out that although the curriculum re-organization in 2006 was expected to reduce the content overloading, this objective has not been achieved in many subjects, and the Lower Secondary curriculum is overcrowded, and therefore, certain subjects should be amalgamated.

- In a comparison of curriculum with other countries such as the UK and Singapore, it can be seen that Sri Lanka needs to improve on the continuity and progression between different stages of schooling, e.g., the transition between primary to junior secondary and junior secondary to senior secondary. Horizontal and vertical integration of the curricula of many subjects needs improvement. Therefore, it is crucial to assess the need to re-distribute the content between different grades in some of the subjects.

- Curriculum designers need to take cognizance of these factors which can be effectively utilized to complement learning. The proposed reforms aim to engage informal learning and channel it towards independent, deep experiential learning of theoretical concepts learned in the classroom.

Issues

The present school curriculum contains mainly the subject content, and as a result, there is content overload, and students are confined to learning only the subject knowledge. For example, the current **grade 6** class has **13 subjects.**

- This system compels students to cram the subjects they are expected to reproduce at the final written examinations. To accumulate more subject knowledge, the parents are compelled to send their children to fee levying private tuition classes.

- Unhealthy competition among students also had been created as a result of this practice.

- Studies are mainly confined to textbooks and teachers often "teach," and as a result, there are no adequate opportunities for the children to learn independently and think creatively.

- Producing material related to different subjects aiming at the examinations has become a business today, and parents spend their finances to "buy the subject knowledge" for their children. For example, there is material focusing on examinations available for sale, including the student assignments.

Proposals

- Link subject knowledge to competencies/skills at every grade and allow children to learn through engaging in suitable activities,

- Provide more opportunities for students to learn by collecting relevant information and data

- The curriculum appropriately integrated with the testing and assessment system.

- Textbooks should also be developed to allow children to engage in more learning practices.

- Make extra-curricular activities compulsory for all students, including sports, aesthetics, the study on environment and society, community service and the like. Integrate continuous evaluation and assessment systems and include such marks as a percentage into the final examination results.

- Introduce life skills, including skills in electrical, plumbing, carpentry, and masonry. This would provide opportunities for the children to use the skills in real life, even as Do It Yourself (DIY) practices.

- Creative/ innovative work under the proper guidance of teachers for individual students is essential. Consider such innovations for the final examination results. E.g., innovations introduced by some students during COVID - 19 period proves that the students possess the creative and innovative abilities.

- Create a friendly and desirable environment for students to learn and develop social interactions and to enjoy school activities. Provide more time to the students in the school to engage in extra-curricular activities which will be assessed and included in the final examination results. Students may be allowed to stay after standard school closing time, and teachers should be provided with suitable incentives to stay after regular school hours to guide the students.

- Introduce ways to inculcate ethical values, including respect others, sharing resources, non-violence, non-competitive attitudes, democracy, the rule of law.

- Introduce Comparative Religion & Value Education as a subject. All students should learn the basic principles of all major religions and study the key social values. Elaborated versions of respective religions can be learned at Sunday schools organized by respective religious institutions.

- All children must acquire foundation skills in reading, writing, speaking, and mathematics. Improving handwriting is also important. A study conducted by the NEC shows that a large number of students lack the basic language and numeracy skills and with poor handwriting. Assignments in reading, practical writing, and making presentations should be given to the students, and such assignments should be assessed through proper methods.

- Ensure that all children learn not just foundation skills but also transferable skills such as critical thinking, problem-solving, advocacy, and conflict resolution to help them become good citizens. Curriculum may include practical skills such as recycling systems, water harvesting, and preservation, using alternative energy sources for cooking, cleaning up public places, waste management, creating gardens, and planting trees to acquire environmental awareness.

Emphasis on the core subjects

- Developed countries have emphasized that Science, Mathematics, and English as core subjects to be taught from Grade 1 onwards. Looking at the global trends, it is important for us to give due recognition to these three subjects in addition to the mother tongue and religion.

- In Sri Lanka, at the primary level, the basic sciences are included as a component of the integrated Environment Related Activities (ERA) curriculum. It is prudent to investigate whether Science is given its due place and whether Science should stand separately as a core subject. It is questionable whether laboratory work is given sufficient importance in the science syllabus at the secondary level.

- In as much as Mathematics is an important subject, and one needs to find whether there is a need for all students to follow the same syllabus at the upper secondary level. Countries like Singapore and the UK have adopted a two-tier system where the higher tier is followed by the students who require higher mathematical knowledge and skills and the lower tier by those who only need practical knowledge of Mathematics.

- The World Bank Report, "Transforming School Education in Sri Lanka," published in 2011, suggests the improvement in teaching and learning English at the primary school level. In order to prepare our young generation to face the challenges of the future, we need to do more than what is being done currently and commence providing more opportunities to learn English as an international language from Grade 1.

- Teaching English interactively is important. A lot of quality work regarding quality teaching of the English Language has been done and still being done at the TRANSFORM project, which is a collaborative effort between the MoE and British Council.

- Another important aspect is integrating ICT from the primary level to enhance teaching and learning across the curriculum. The recent experiences have highlighted the need to understand the importance of computers, the internet, and online education, and the sooner it is introduced, the better it would be for the overall teaching and learning process of the children.

Preparing for the workplace

- Secondary education level is the best time to judge the schools on their success in dealing with issues such as whether the students are equipped with the necessary skills to take their place in the workforce. The main focus of the current system is on academic content and preparing students for university entrance rather than addressing the national needs. The system is ill-equipped to help schools address the broader issues and, therefore, is at the risk of losing opportunities for young people.

- There are many important and relevant technical subjects offered as optional subjects at O/L. However, the demand for many of these subjects is low due to the non-availability of specialized teachers and the required resources. Further, there is no motivation for students to offer such subject as these technical subjects are not linked to qualifications of the National Vocational Qualification (NVQ) Framework and therefore, does not provide a direction for a suitable career after school. It is important that the vocational pathways are created within the school structure in the same lines as what is done with the BTECs in the UK.

Way forward

- The current competency-based curriculum that is in place in Sri Lanka, with some fine tuning, has the potential to deliver far more than what is achieved today. However, to reap the maximum benefits, the practices should be improved by looking at the experiences of countries such as UK and Singapore.

- It is imperative that teachers are adequately and continuously trained to implement the present curriculum with the proposed changes, and the teachers should have a better understanding of what is referred to as a competency-based curriculum.

- While specific competencies are looked at, it is crucial that the overall curriculum considers the need to address further important skills and competencies such as communication, creativity, critical thinking, collaboration, and the ability to learn, which would help all Sri Lankans to succeed both nationally and internationally.

STEAM EDUCATION

STEM is an acronym formed by the first letters of four subjects; Science, Technology, Engineering, and Mathematics. STEAM derived from STEM and 'A' stands for Aesthetic, Social Sciences, Languages, Economics in a different context, or different proposals to enrich the meaning of STEM. The interim report of the STEM working committee of the National Science Foundation, Sri Lanka (2017), posits STEM as a multidisciplinary stream of experience relevant in the economic value creation and live in harmony with nature. Another report named "Sri Lanka STEM education strategy" issued by the Science branch defines STEM education as a multidisciplinary, integrated approach to build interest and competencies in Science, Technology, Engineering, and Mathematics as a lifelong process that would produce a creative citizen with the capability of contributing innovatively to sustainable national development in a global context."
Thus, it seems that the underpinning principle of both definitions is to break the walls of silos of the subjects and promotes multidisciplinary learning through an approach of integration. As real-life problems are multifaceted integrated knowledge is needed in problem-solving. According to the NSF report, to apply such knowledge in real life, students' mindset should relate science with technology, mathematics with science, and mathematics with technology. Engineering Designs would arise with an integrated knowledge of these subjects (2017, 13). This kind of practice emphasizes the importance of collaboration and teamwork, paving the way to the STEAM. At this backdrop, the following actions proposed for STEAM education in Sri Lanka.
National policy on STEAM within a multi-sectoral broader thinking-frame mainly considering the economic direction and future development agendas of the country

2.7 Establishment of Curriculum Development and Assessment Center

Set up an independent Institution for curriculum development and assessment.

- This center may be entrusted with developing a broad and integrated framework of curricula for general, vocational, and university level education to maintain an integrated system. This center should develop broad curricula, including broad subjects and contents, standards, and strands for competencies, knowledge, and skills that every child should complete at the end of every grade. Assessment methods of knowledge and skills also should be included in the broad framework.

- Similarly, the proposed broad framework of curricula and assessment should include vocational and higher education sectors. The standards of knowledge and skills required should be developed to cater to further education and world of work.

- Detailed curricula and syllabuses for each sector (general. vocational, and higher education) should be developed by respective institutions such as NIE, UGC, TVEC and the like based on the broad framework developed by the Center.

- Ministry of Education should develop detailed programs including contents, standards, and strands for knowledge and skills with NIE, DOE, EPD and other relevant institutions.

- Ministry of Vocational Education should develop detailed curricula and assessment systems with the cooperation of TVEC and other relevant institutions. Assessment systems required for the future life of students with the cooperation of relevant institutions. It is essential to look at a broad range of courses offered by vocational institutions in other countries and introduce a broad spectrum of courses needed for the world of work. For example, the broad range of courses offered by the Community Colleges in the USA may be studied and adopted appropriately.

- Ministry of Higher Education should coordinate curriculum development, including the syllabuses and testing systems for the universities lead by the UGC, with the active participation of universities. It may be prudent to study the demand in the employment market and introduce suitable courses at different levels in university education.

- All relevant institutions should prepare guidelines on assessment, syllabus writing, and textbook production, incorporate skills required for the world of work by integrating education to employment, review curricula from time to time, develop a pragmatic framework for the medium of instruction, and improving proficiencies in national and international languages particularly English.

- The proposed **Curriculum Development and Assessment Center** may be placed under the National Education Commission as a subsidiary apex body and operate as an autonomous institution.

NEW JERSEY CORE CURRICULUM STANDARDS

The standards were intended to clarify and raise expectations by providing a common set of expectations for all students to better prepare students for postsecondary education and employment. The standards were created to improve student achievement by defining what all students should know and being able to do at the end of thirteen years of public education. Standards were provided to assist schoolteachers and curriculum specialists in aligning curriculum with the standards, which provided a curriculum framework for each content area. In addition, assessments were aligned to the core curriculum content standards, which were required to be reviewed and revised every five years. It is expected that students would apply what they learned in school as they obtain knowledge and skills in a multiplicity of ways. It is most productive to concentrate on how the resources could be best used to achieve higher order results across an array of content areas. Each content area focuses on developing higher order thinking skills and requires students to read, write, and create. The very nature of learning lends itself to an integrated approach with reinforcement through experiences beyond the schools' walls, such as community service, mentorships and structured learning experiences. Of key importance to the successful implementation of these standards is teacher preparation and ongoing high-quality professional development, and teacher preparation programs must focus on both content and pedagogy.

There are nine content areas in the Core Curriculum Content Standards;

a. Visual and Performing Arts
b. Comprehensive Health and Physical Education
c. Language Arts Literacy
d. Mathematics
e. Science
f. Social Studies
g. World Languages
h. Technological Literacy
i. Career Education and Consumer, family and Life Skills

Under each of the content areas, the expected benefits, communication with the society, and strands relevant and cumulative progress indicators have been developed. These indicators are linked to knowledge and skills that the students should build by the end of each grade.

Writing is one standard under **Language Arts, and Literacy** and all students are expected to write clear, concise organized language that varies in content and forms for different audiences and purposes.

Example 1. By the end of grade 3 students will build upon knowledge and skills in;

- Writing as a process (prewriting, drafting, revising, editing, post writing)
- Writing as a product (resulting in a formal product or publication)
- Mechanics, spelling and handwriting
- Writing forms, audiences and purposes (exploring a variety of forms)

All subjects included in the New Jersey Curriculum have been broken into detailed elements related to the subject. For example, Mathematics is presented as given in the following diagram.

Number and Numerical Operation

a. Number Sense
b. Numerical Operation
c. Estimation

Geometry Measurement

a. Geometric Properties
b. Transforming Shapes
c. Coordinate Geometry
d. Units of Measurement
e. Measuring Geometric Objects

Patterns and Algebra

a. Patterns
b. Functions and Relationships
c. Modeling
d. Procedures

Data Analysis, Probability, and Discrete Mathematics

a. Dan Analysis (Statistics)
b. Probability
c. Discrete Mathematics—Systematic listing and Counting
d. Discrete Mathematics—Vertex-Edge Graphs and Algorithms

Mathematical Processes

a. Problem Solving
b. Communication
c. Connections
d. Reasoning
e. Representatiens
f. Technology

2.8 Testing & Assessment systems-

Summative vs. Formative Assessment: Term tests vs. Classroom Assessment

The G.C.E (O.L) and G.C.E (A.L) Examinations are summative tests. The students continue the learning process for two years each in Grade 10 & 11 and Grade 12 & 13, respectively. However, the students will have to show evidence of what they have learned for two years within a few hours under written examination conditions, which is irrational. Students' achievement is decided on what they have done during the three hours' time at the written examination. However, the candidates do not have an opportunity to correct themselves because the evaluation ends up there. This has become a serious issue in developing the child's personality and skills during the school career.

Issues

- Present system undertakes Testing & assessment of subject knowledge through year-end written examinations

- Confine to testing the subject knowledge as included in the curriculum. Students are compelled to study by-heart the subjects to answer at the examinations. As a result, students must follow the private tuition classes since they compete among them, particularly at A/L, to gain admission to a university.

Proposals

- Link the testing system with curriculum, syllabus writing, and textbook production

  "Traditionally, literacy, numeracy, and disciplinary knowledge are assessed using standard tests and data are gathered related to enrollment and attendance; however, these do not measure many aspects of quality education. Missing are the assessment and evaluation of life skills, perceptions, behaviors, and values which are part of quality education." (UNESCO)

- Develop methods of testing the student's creative activities, including aesthetics, sports, community work, environmental studies and so forth to be made a part of the continuous assessment which should be given weightage in the final examination marks such as GCE O/L and A/L.,

- Assess the reading, speaking, and listening abilities in addition to writing when testing language proficiencies. Testing systems used in other countries should be adopted appropriately in our system.

- Introduce a transparent and unbiased system of continuous assessment of student activities, including extra-curricular activities. Establish panels of teachers to ensure objective assessments. This will promote a school-based assessment system.

- Marks obtained by the students for extra-curricular activities may be given 30% weightage of total assessment marks and be counted for the final examination results of O/L and A/L. Department of Examinations should develop a detailed methodology for objectively assessing the extra-curricular activities.

- Need to retain students of the secondary levels in schools to attend to the extra-curricular exercises after regular school hours and make it compulsory. These exercises should be done under the close supervision of teachers.

- DOE should be assigned to develop a pragmatic testing and assessment system with a proper combination of summative and formative assessments. DOE should develop guidelines to conduct classroom-based assessment tools that can help teachers identify, monitor, and support the learners.

- Supervision by teachers at different stages of an assignment given to the students, including selecting topics, the methodology to collect and analyze data, and a draft of the assignments should be practiced (learning process) rather than assessing only the final product. At present, it is observed that there are various external entities who prepare final assignments to be sold to the students.

- Strong emphasis needs to be given to formative assessments (School/classroom-based, teacher-based) of which the scores are recognized.

DEPARTMENT OF EXAMINATIONS TO IMPLEMENT A NEW SYSTEM FOR FORMATIVE ASSESSMENT IN THE FORM OF CLASSROOM ASSESSMENT

In the suggested reform, there will much emphasis on Formative Assessment in the form of 'Classroom Assessment.' **Formative assessment was introduced to Sri Lanka in the form of School Based Assessment, which was only one activity i.e., student assessment.** It has not produced a good outcome due to many practical and administrative issues. Therefore, to enjoy the benefits of implementing Formative Assessment, the DOE should gain expertise on Formative Assessment. The Department of Examinations has the best expertise in the country for Summative Evaluation for nearly 70 years. All senior officers have studied abroad and specialized for areas related to Summative Assessments. However, the department needs fresh knowledge about implementing a whole **Formative Assessment System** to cover,

1. Student Assessment
2. Teacher Appraisal
3. School Evaluation
4. System Evaluation

DOE may seek assistance from countries like New Zealand, Australia, and Finland to formulate and implement a sound system of Formative Assessment in Sri Lanka. It is also necessary to provide thorough training to relevant key personal in the Education System, including the teachers. DOE may commence this system with a pilot project to identify the drawbacks and revise the programme and implement the formative assessment as a regular assessment system.

Officers of the Department of Examinations must get a thorough understanding about formative assessment to plan the country's new initiative of implementing a Valid Formative Assessment System.

TEST ITEM WRITING AND PAPER SETTING

- When the **syllabus is dense and vast,** the question paper can be **difficult** for the candidates. The questions are made proportionate to the weightage of components of the syllabus. The paper setter will have to ask questions to cover the syllabus. **This problem can be rectified by designing a desirable good syllabus, which is not a burden to the students.**
- The shortcomings of the Teaching Learning process affect student achievements very much. At present, teachers teach to the test (Wash Back Effect) and ignore the learning process. When **no robust learning has taken place,** the candidates cannot answer the questions accurately.
- Even though the questions will have to be based on Bloom's taxonomy, the questions are mostly based on knowledge, understanding, and applying in some question papers. They do not measure higher order thinking skills.

Effective Formative Assessment

Formative (Classroom) assessment is a process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and to learn to improve students' achievements of intended learning outcomes.

The attributes below have been identified as critical features of effective formative assessment:

1. Learning progressions should clearly articulate the **sub-goals** of the ultimate learning goal
2. Learning goals and **criteria for success** should be identified and communicated to students
3. Both **self- and peer assessments** are important for providing students an opportunity to think metacognitive about their learning
4. A classroom culture in which **teachers and students are partners in learning (collaboration)** should be established
5. **Evidence of learning** is elicited during instruction.

Need of an efficient monitoring mechanism on Classroom Assessments

- Establish a monitoring body with officers well trained for Formative Assessment at National Level by the MOE.

- Zonal Level monitoring with the leadership of the Zonal Director should be established. Uniform awareness programme on what to monitor and how to monitor should be conducted. The Zonal Director should liaise with the DOE on the monitoring process.

- Well-qualified coordinating officers should be appointed to ensure proper implementation of the system.

In New Zealand, the evaluation and assessment system is grounded in a strong belief in teacher professionalism. Teachers are seen as the main experts not only in teaching but also in assessing their students. Well-established approaches to teacher appraisal further support **teacher professionalism.** Teachers have a good degree of ownership of the appraisal process

Student Assessment

- Assessment is designed to improve learning.
- Assessment is grounded in teacher professionalism and supported by professional development
- Teachers' assessment practice is based on a range of sophisticated tools
- National standards respond to a specific need in primary education
- High-quality assessment is well established in upper secondary education

Teacher Appraisal

- Teaching standards are well established, and teacher registration processes are in place
- Teacher appraisal processes are commonplace in schools with a suitable focus on teacher Development.
- Teachers are trusted professionals with a high degree of autonomy and are open to professional Feedback.
- The principle of associating good performance to career progression is in place.

The example below is related to the English Language. What a child can do according to the curriculum at different levels should be identified as given in the table; the assessment standards must be defined. The number of credits covered by each assessment standard has to be decided.

Level	Assessment standards	Credits
Level 1	Read and understand **simple** texts Write **simple** texts on everyday topics	5 5
Level 2	Read and understand a straightforward text on a familiar topic Write a **simple connected** text on a **familiar** topic	5 5
Level 3	Read and understand a moderately complex text in an applied context Write a **connected** text on a **familiar** topic	5 5
Level 4	Read and understand a range of extended written text **independently** Write **moderately complex** texts on **general** topics	5 15

Assessment

Title	**Write a connected text on a familiar topic (EL)**		
Level	**3**	**Credits**	**5**

Purpose	This unit standard is for people for whom English is an additional language. People credited with this unit standard are able to write a connected text on a familiar topic (EL).

Classification	Languages > English Language

Available grade	Achieved, Merit, and Excellence

Criteria for Merit	Content, structure, and organization of the written text are appropriate to the topic and text type. The text is coherent and cohesive with minor lapses. A wide range of language features and vocabulary is used. The meaning of the written text is conveyed with minor inaccuracies.

Criteria for Excellence	Ideas are linked effectively using a range of different cohesive devices. The text is coherent and cohesive with minimal lapses. An extended range of language features and vocabulary is used effectively. The meaning of the written text is conveyed with minimal inaccuracies.

Prerequisites	Unit 27999, Write a simple connected text on a familiar topic (EL), a demonstrate equivalent knowledge and skills.

Guidance Information

1. English Language (EL) refers to the acquisition of English as an additional language.
2. This unit standard can be awarded an Achieved, Merit, or Excellence grade. For the Achieved grade to be awarded, the outcome must be achieved as specified in the outcome statement. For the Merit grade to be awarded, the candidate must meet the Achieved and Merit criteria. For the Excellence grade to be awarded, the candidate must meet the Achieved, Merit, and Excellence criteria.
3. This unit standard is at a level comparable to the Common European Framework of Reference (CEFR) high B1. It is intended for learners with increasing independence in English. A structured overview of all CEFR related scales can be found at http://www.coe.int/en/web/portfolio/overview-of-cefr-related-scales.
4. This unit standard may contribute to the New Zealand Certificate in English Language (General) (Level 3) [Ref: 1882]. The requirements of this standard are consistent with the NZCEL Guiding Document. This document includes guidelines relating to appropriate texts, task specifications, and assessment conditions and can be found at http://www.nzqa.govt.nz.
5. All assessment activities must be conducted in English, which must not be the candidate's first language.
6. The assessor must be satisfied that the candidate can independently demonstrate competence against the unit standard.

7. It is recommended that:
   i. the outcomes are assessed as part of an integrated unit of work, relevant to the learning context of the candidate;
   ii. assessment be conducted in conjunction with assessment against other English Language unit standards at this level.
8. Candidates may use a bilingual and/or an English dictionary, but not electronic devices.
9. Candidate's writing competence must be assessed after being given the opportunity to edit and proofread their work. Candidate's drafts and any supplied or sourced resource materials must be attached as part of the completed assessment.
10. Assessment support material for English Language unit standards can be found at www.nzqa.govt.nz.
11. Definitions

    Coherent refers to the presentation of ideas in a comprehensible manner and logical order.

    Cohesive refers to how ideas are linked between and within paragraphs using cohesive devices. These include conjunctions, connectives, and pronoun reference.

    The Connected text refers to the use of conjunctions and other connectors to explicitly link facts and ideas.

    Content refers to the selection and development of ideas related to the topic.

    The Discursive text refers to a piece of writing that attempts to give two or more sides of a topic or issue. It contains an explanation of the purpose, arguments for and against the topic, and a conclusion.

    Errors refer to the systematic use of incorrect language features.

    The Explanatory text refers to statements of how or why the feature or process of a phenomenon changes. It contains a general statement, which describes the phenomenon, an explanation of the change and a conclusion.

    An Extended range of language features and vocabulary refers to the selecting a variety of language features and vocabulary used to communicate ideas precisely and fluently.

    A familiar topic refers to a topic that is well known and relevant to the candidate.

    Inaccuracies refer to lapses in control in text structure, language features, vocabulary, spelling, and punctuation.

    Information text refers to the classification and description of information. It contains a logical sequence of facts that are stated without any personal involvement.

    Organisation refers to the arrangement of ideas into paragraphs in a logical order.

    The Persuasive text refers to the use of words to convince the reader of a view regarding an issue. It contains a statement of viewpoint, supporting evidence, and restatement of viewpoint.

    The range of language features and vocabulary refers to the selection and use of language features and vocabulary to communicate ideas.

    Recount refers to the retelling of past events. It contains an orientation, order of events, and re-orientation.

    The report refers to a document containing information organized in a narrative, graphic or tabular form, and may refer to specific periods, events, occurrences, subjects.

    A wide range of language features and vocabulary refers to the selection of a variety of language features and vocabulary, used effectively.

Outcomes and evidence requirements

Outcome 1

Write a connected text on a familiar topic (EL).

Range minimum of 250 words;
text type may include but is not limited to – information, recount, persuasive, discursive, explanatory, report.

Performance Criteria

1.1 Content, structure, and organization of the written connected text are generally appropriate to the topic, audience, and text type. The written text is generally coherent and cohesive. A range of language features and vocabulary appropriate to the text type is used. The meaning of the written text is generally conveyed but may contain errors and inaccuracies.

Range Language features include – complete simple, compound, and complex sentences, verb forms, cohesive devices, vocabulary relevant to the topic, and may include but are not limited to – formal, objective language.

Thorough Teacher Training on Formative Assessment

- If we are to integrate a proportion of marks from the formative assessments to the national paper-pencil test, the consistency, validity, and reliability of such assessments should be ensured. Therefore, a **thorough first-hand teacher training exercise** must be organized to educate **the teachers about why it is significant to do formative assessments.** The practicality issues also should be addressed concerning the large student numbers and the necessary infrastructure.

- Essential **teacher competencies** must be defined, and teachers must see that they all are equipped with all those competencies. (Teacher Competencies are defined in The **Commonwealth of Learning (COL) project** at the NCOE/TTC Branch of the MoE)

2.9 Textbooks

Educational Publications Department (EPD) has been given the authority to produce textbooks by the gazette notification of No. 14,753/3 dated 30th September 1966.

Apart from compiling, printing, and distributing school textbooks, EPD is given the authority by the same gazette notification to produce, distribute, and sale of teaching aids, audio-visual materials, and other equipment.

Present Functions of EPD

- Compiling, printing and distribution of 443 categories of textbooks free of charge from Grades 1 to 11 and Grade 12 English Language

- Production of supplementary books for the main 4 subject streams of Advanced Level; Science, Commerce, Arts and Technical subjects

- Printing and distribution of teachers' guides for all the subjects
- Printing and distribution of Brail books for the visually impaired children
- Production of e-learning materials and SMART textbooks; SMART textbook for Grade 11 Science in all three media is produced and available at http://smarttextbook.epd.gov.lk
- Compiling, printing, and distribution of textbooks to all Pirivens
- Promote sales of supplementary books in 6 Book Sales Promotion Centers at Isurupaya, Maradana, Fort railway station, Meepe, NIE and Jaffna
- Uploading all the textbooks to departmental website www.edupub.gov.lk

Statistics

categories of textbooks	number of copies of textbooks printed annually	Annual cost (LKR)	Number of teachers' guides	Number of schools that receive textbooks	Number of direct distribution centers
443	42 million	4 billion	580	10176	2200

Textbooks are directly distributed to all national schools + schools with students more than 1500. Schools with students less than in 1500 receive textbooks from distribution centers
It is planned to introduce,

- Production of SMART textbooks for Science, Mathematics, and English for all grades
- Implementation of an automated system to office work, distribution process and Book Sales Promotion Centers, Establishment of Provincial level warehouses

Issues

- About Rs. 4.5 billion spent annually for writing, printing, distribution of textbooks, which is quite high, and the system seems routine and less productive.
- Textbooks are re-written at regular intervals and writers are selected on ad hoc basis
- Students usually expect new textbooks every year and, therefore, no adequate respect for used books.

MAJOR ISSUE – QUALITY OF TEXTBOOKS

The Quality of Textbooks should reach international standards. Textbooks should be produced based on a good curriculum. Some textbooks have mismatches with the syllabus.
To write textbooks with good quality, a set of material writers should be trained, including the subject officers at the Education Publications Department. Every year this group must update their knowledge and be engaged in improving the quality of test books. Experts should edit written textbooks. The Teachers' Guides must be written based on the textbooks and must include everything that a teacher needs to teach the lessons effectively.

Proposals

- Textbooks for main subjects such as mathematics, science, history, geography and the like may be written for an extended period as there is no significant change in the content.

- Textbooks may be distributed through registered bookshops. Those who are willing to open bookshops should apply to the Education Publication Department (EPD) and register the bookshops.

- At least 5000-10,000 bookshops may be established throughout the country, which would provide a business opportunity to small entrepreneurs.

- A simple declaration may be obtained from the parents stating their willingness to pay for the textbooks for their children or to receive textbooks free of charge.

- Parents who state that they could pay for the textbooks may buy the textbooks at any bookshop. Parents may recognize it as a contribution to their children's education.

- Parents who have stated that they cannot pay for the textbooks should be given a coupon to get the books from the bookshops, and the EPD should reimburse the value of coupons.

- Students who opt to buy used textbooks may be given such books at a reduced rate and allow them to buy any other books or stationery for the balance amount within the textbooks' approved value. This may promote the reuse of textbooks (At present about 25% of the books are reused for the following year).

- The amount of funds saved from book sales should be allocated to other requirements of the education of children. For example, such savings may be used to provide digital devices to needy children at a concessional rate.

- Textbooks should be based on the syllabus of a subject in the curriculum. Based on the syllabus weightage, among units and learning outcomes defined in the syllabus, the question paper should be set.

2.10 Reading Habits and Use of School Library

Issues

- Presently the books available in the school library are hardly read as the students are required to read the textbook and prepare for the examination.
- A few students borrow books from the school library but mainly novels and short stories.
- The libraries in some schools are not freely accesible for the students as they are kept under lock and key.
- There is no motivation for the children to read books as they are confined to cramming subject content.

Proposals

- Compulsory Reading assignments should be given to students and encouraged to use books in the library.
- Individual assignments- Every student selects a book and makes a brief presentation after reading the book on its content with critical comments. This should be done under the supervision of the teacher.
- Group assignments- Teachers to give a topic to students in a group and ask them to read relevant books and make a group presentation, citing the books and critical comments.
- Students should be taught reading techniques to find the required topic for the assignment.
- Evaluation of reading assignments also may be taken into account in the final assessment process.
- School libraries should be developed in a planned manner, and the Ministry of Education may issue guidelines on acquiring the required books for the libraries.
    - Prescribe a list of books for each subject and put all those books in the library in all schools.
    - Provide required training to the teachers on what is expected by this reading assignment

2.11 Career Guidance

Career guidance refers to services and activities intended to assist individuals, of any age and at any point throughout their lives, to make educational, training, and occupational choices and manage their careers. Such services may be found in schools, universities and colleges, training institutions, public employment services, the workplace, voluntary or community sector, and the private sector. (OECD, A Handbook for Policy Makers, 2004)
Career guidance plays a critical role in preparing students for the world of work by equipping them with the skills to remain competitive in the global economy and lead meaningful and productive lives. School career guidance programme can positively impact students' educational and career decisions and their academic performance. (Lapan, Gysbers & Sun, 1997)

Career guidance and career education are essential aspects of schooling, especially under circumstances where jobs are not readily available.

Issues

As identified by Dr. T. Piyasiri, there are several issues in the career guidance practices in Sri Lanka.

- Many learners will not be able to find their occupational pathways or higher learning or training opportunities due to lack of career guidance at schools.

- Inadequacy of a clear policy on career guidance at the school level

Career guidance activities have been carried out on periodic guidelines issued by the Ministry of Education. Though the career guidance has been recognized as an essential part in the school education, a legally accepted policy on career guidance and career education cannot be seen in the education system in Sri Lanka

- The distinction between career guidance and psycho-social counseling has generally not been well understood, and both tend to be treated as one.

Many schools have appointed the counseling teacher to conduct the career guidance programmes in the school. However, combining psychological counseling and career guidance services are two different fields, and Psychological counseling addresses people's physical, emotional, mental health issues and feelings of distress. Career guidance concerns the job market and relevant skills and confidence to be employed in the world of work.

- Lack of integrated information system for career guidance in the school level

- A proper management structure cannot be seen from the ministry level to the school level to deliver the information and the guidelines to function the career guidance in the schools.

- It is not easy to find a responsible person at the provincial and zonal levels to coordinate the schools.

- Inadequacy of resources for a productive career guidance programme

Human resources, physical resources, technical resources, and financial resources are essential for the schools' career guidance. Although the circular provides a full-time teacher for counseling and career guidance, most of the schools do not have a teacher dedicated for career guidance. Some principals are unaware of the importance of career guidance services, and the work is entrusted to a teacher, in addition to regular teaching duties. As a result, the teacher can neither develop specialist knowledge on the subject nor find time for career guidance activities.

- Lack of awareness among the teachers and the parents regarding the importance of an effective career guidance service.

Parents are keen on the employment aspirations of their children, but they are unaware of the children's aptitudes and the available job opportunities in the world of work. Thus, they tend to persuade children to seek traditionally preferred professions only as both teachers and the parents persuade their pupils to pass the examination only. Therefore, both parties do not pay much attention to promote career guidance in schools.

- Lack of coordination with other careers education agencies

There are many government agencies such as the Ministry of Higher education, Ministry of Education, Ministry of Vocational training and skills development, National Institute of Education, Vocational Training Authority, Department of Labor, as well as other organizations such as the Chambers of Commerce and OPA which are interested in promoting careers through education. However, there is less coordination seen between them and the schools.

- Lack of awareness programme to promote the entrepreneurship among the school pupils

- There is not enough time allocated for promoting entrepreneurship in the schools and motivating them for self-employment. Some schools have a young entrepreneur's society, but they are not functioning well.

- Lack of strategic partnership between the schools and the employers

There is no memorandum of understanding between the schools and the employers at the regional levels to utilize the voluntary support from the co-operate sector, and for employers to visit schools when they are invited to conduct any workshops or seminars.

- Lack of relationship with the needs of the world of work/ lack of proper career guidance

- Present status does not provide opportunities for teachers, students and parents on career opportunities based on interest and demand (Available career opportunities in the world of work; McKinsey Center for Government; Education to Employment: Designing a System that Works

Global Context in Career Guidance at the school Level

Internationally, career guidance is statutorily accepted in the education system of many European countries and Asian countries.

In the UK, a well-planned career guidance programme which is based on Gatsby's 8 Benchmarks can be seen, and each school or colleges ensure that there is a named individual called career leaders who are responsible for managing, planning, coordinating, delivering, and administrating career education and information, advice, and guidance. These career leaders are well qualified with master's degrees in career guidance. However, not only in the UK but also in many European countries, career guidance is conducted by qualified career advisers who are graduated in Career Guidance with postgraduate qualifications.

Finland's Employment Office employs some 280 specialized vocational guidance psychologists who have a master's degree in psychology and completes short in-service training. **Germany's** Federal Employment Office's career advisers have generally undertaken a specialized three-year course of study at the Federal College of Public Administration. **Ireland's** guidance advisers have a post-graduate diploma in guidance in addition to a teaching qualification.

Using modern technology can be seen as a new trend in career guidance in the world. **Australia's** national careers website (www.myfuture.edu.au/) contains information about courses of education and training, labor market supply and demand at the regional level, on the content of occupations, and on sources of funding for study.

In the **UK**, career advisers use ICT-based tools such as **COMPASS** and **Tracker** for testing student's interests, skills, and personality. In the **United Kingdom**, call center technology is being used to widen adults' access to education. They use an online database of information on over half a million education and training courses. Over four million people have called the national advice line since it was established in 1998. The helpline is open between 8.00 and 22.00, 365 days a year.

The career adviser's role has become a central component in the school education system than the Sri Lankan context.

Ireland's secondary schools have one guidance adviser for every 500 students. At the University of Leicester In **England,** all students are required to make an appointment and have a lengthy interview with the career advisers, and full-time career guidance teachers, who are involved in career education in the schools. In **Ireland,** Guidance counselors are teachers, with a reduced teaching load to provide career advice, help students with learning difficulties, and help those with personal problems.

Running separate agencies for providing career guidance at the national level can be seen in many developed countries. In England, Career Development Institute is the national body for career guidance, **Canada's** public employment services conduct many career guidance services to community organizations, and they provide career development activities, such as information services, career counselling, and job-search workshops.

Well-equipped career guidance centers in the school level can be seen in many countries in the world. In **Germany,** School classes are taken to the career information centers (BIZ) to familiarize themselves with the center's facilities. Students can subsequently re-visit the center and book more extended career counseling interviews at the local employment office. **The republic of Korea** established a 'Career Counselling Department' at the school level with broadly re-organized functions in 1994.This department provides lifelong career guidance and career information for students, conduct vocational aptitude tests for students.

Operating a school to work transition system in collaborating with stakeholders can be seen in the **USA.** This school-to-work transition system integrates career orientation and academic and occupational orientation with high and post-secondary schooling, work-based learning, and skills development. These systems are developed through partnerships between schools, employers, and trade unions and are decentralized to the community level. The three main components are; School-based learning, Work-based learning, and connecting activities.

Proposals

- Guidance is necessary for the selection of subjects and course streams and finding appropriate job placements.

- Career guidance helps students to reflect on their ambitions, interests, qualifications, and abilities. Based on that knowledge, one can access the information about the labor market and educational opportunities by organizing it, systematizing it, and retrieving it as and when required.

- Career guidance would help students to make a transition to the working world. The availability of career guidance facilities can improve the efficiency of the education system by enabling those whom complete education to find gainful employment.

- Career Guidance Programme could help to reduce the drop-out rate of students.

    - Introduce a system of career guidance in the school system, suitable persons with required qualifications to be appointed **as Career Guidance Counselors** by the vocational education sector (Ministry) and place them in schools. Continuous interactions of the career guidance counselors with vocational education are paramount. Provide required facilities including computers, office equipment, and internet facilities for them. Career guidance counselors should update the available information related to the world of work and guide the children and the parents on suitable future employment based on their interests and skills.

    - Suitable persons should be selected as Career Guidance Counsellors through a proper selection procedure from the graduates appointed by the government.

    - Arrange proper and continuous training for the career Guidance Counselors.

    - According to a study conducted by McKinsey Center for Government using data of selected 25 countries, many youths are not sure that their post-secondary education has improved their chances of finding a job. Almost 40% of employers say that a lack of skills is the main reason for entry-level vacancies.

    - "If young people who have worked hard to graduate from school and university cannot secure decent jobs and the sense of respect that comes with them, society will have to be prepared for outbreaks of anger or even violence. The evidence is in the protest that has recently occurred in several countries. To address youth unemployment, two fundamentals need to be in place: skill development and job creation. Employers need to work with education providers so that students learn the skills they need to succeed at work, and the governments also have a crucial role to play. With regard to education to employment, there is nothing comparable to the Program for International Student Assessment (PISA)".

        - McKinsey's study had identified several potential job categories in its report, and it may be worthwhile to review these opportunities.

          Job categories identified are teacher, salesperson, landscape specialist, web designer, banker, accountant, musician, car repairer, doctor, nurse, fireman, entrepreneur, welder, surgeon, hotel manager, engineer, architect, and driver.

(Education to Employment: Designing a System that Works, 2011, McKinsey Center for Governance).

2.12 Different Pathways in General Education

Issues

- Sri Lanka school system includes a single pathway from grade 1 to O/L and then to A/L for the students.
- As a result, students drop out at different levels since they do not have alternative pathways.
- Some of the so-called dropouts join the vocational sector, and some join the world of work without any proper skills and training.

Table 1 Single Pathway in General Education

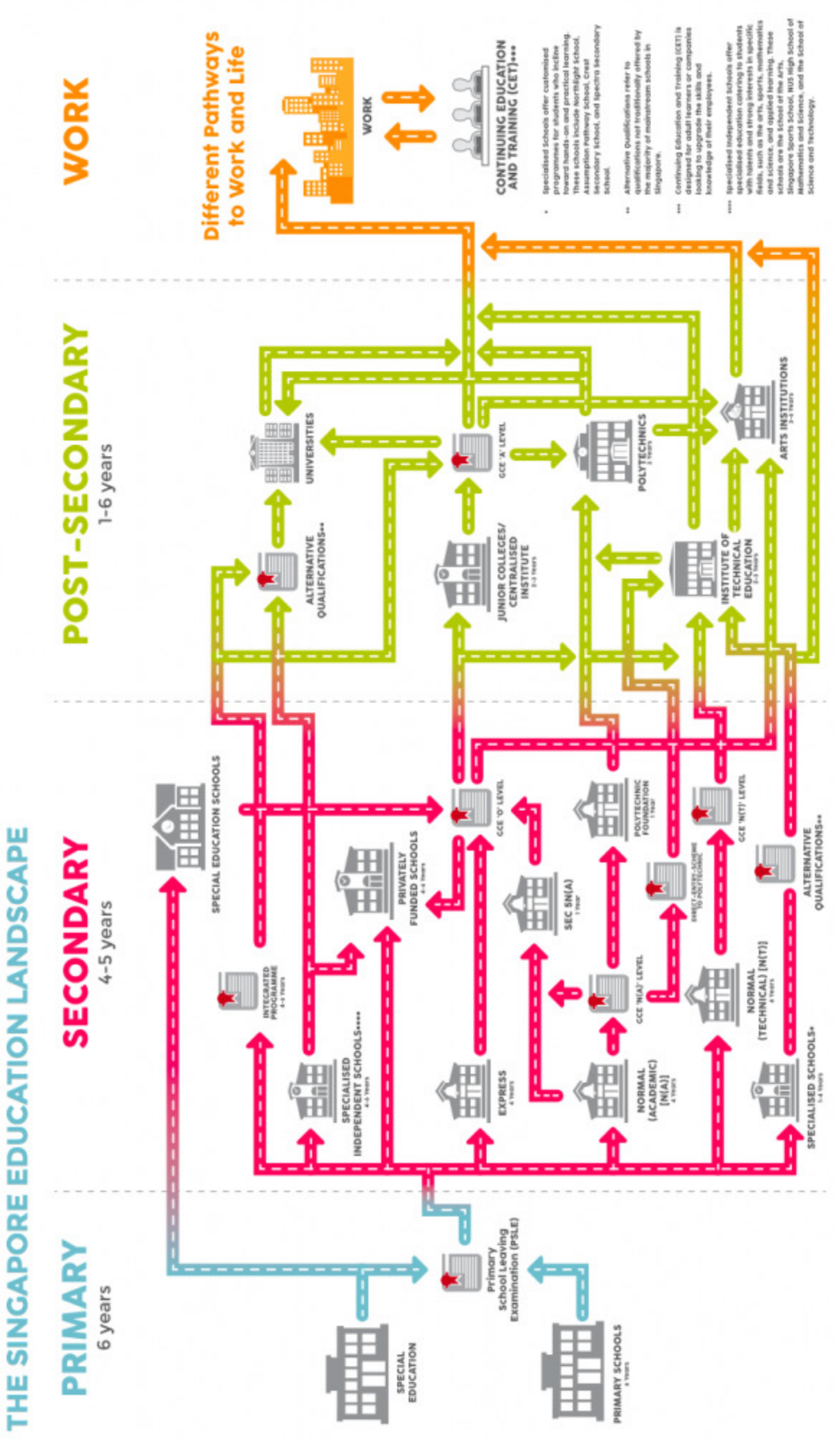
Sri Lanka School System Includes a Single Pathway from Grade 1 to O/L and Then to A/L for the Students.

Student Admitted	1-5	6-9	O/L incomplete	A/L Applied	A/L Sat	A/L incomplete	A/L pass
324,552	5,117	19,718	9,200	290,517	254,771	99,450	155,321

Proposals

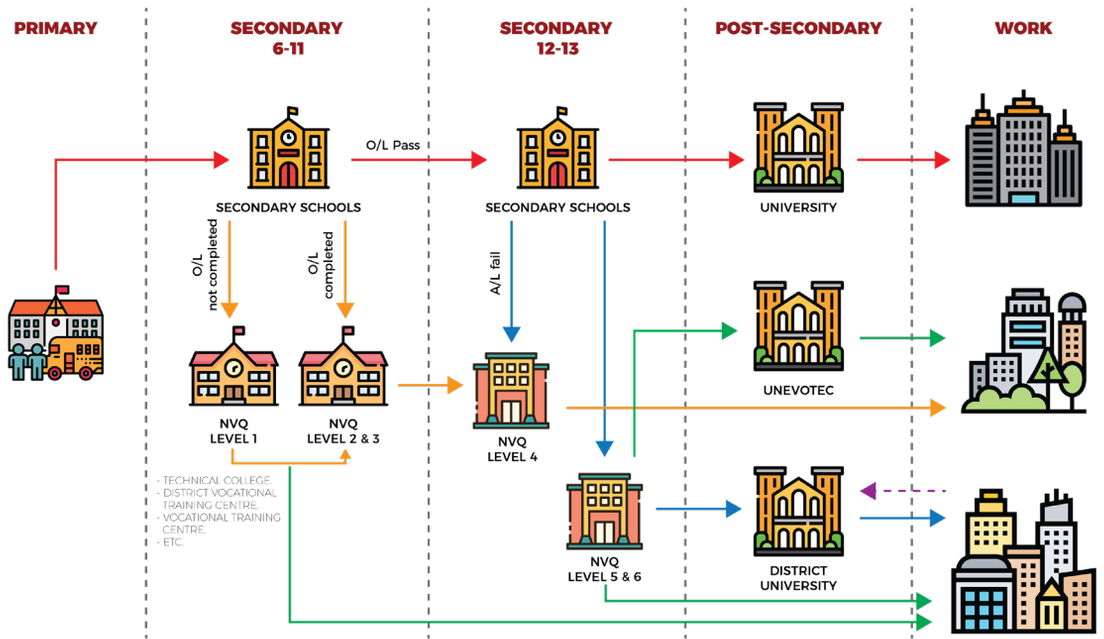
- Provide alternative pathways including vocational, polytechnic, technical and other options for students to select a preferred pathway.
- Coordinate with the vocational education sector to absorb students who do not proceed with the academic pathway until the A/L s.
- Provide opportunities for all students who proceed in different pathways to pursue higher education. Establish institutions on vocational education to offer higher-level studies, including diplomas and degrees, preferably at the district level. E.g., Proposed District universities.
- Consider establishing regional campuses of UNIVOTEC at the district level to provide higher education opportunities for the students in the vocational institutions.
- Rationally integrate NVQ and SLQF and provide opportunities for the students in the vocational sector to proceed with higher studies systematically.
- Carrying out consultations with career guidance counselors operating at the schools on the preferred pathway while taking into account the students' interests and talents. Career guidance counselors should guide the child and the parents showing the vast array of opportunities available in the employment market and allow the child and the parents to select an appropriate pathway.

Different pathways - Singapore model



- Provide different entry points for the school children to join the vocational sector under proper career guidance without allowing them to "drop out" during the academic process. Absorb the students into suitable career categories by giving them due recognition in respective career opportunities. Such students should be provided with suitable "entry points" to recognized vocational institutions. This should be done in line with the NVQ levels for different entry points.

Different Pathways in General Education



NVQ Level	# of Institutes
NVQ Level 01 – (Up to grade 08)	43
NVQ Level 2&3– (From 9 to O/L & A/L not completed)	703
NVQ Level 04 – (A/L fail)	581
NVQ Level 5 & 6 – (A/L pass)	103

EMPOWERING DIGITAL EDUCATION IN SRI LANKA

Background and current status

The Ministry of Education is planning to expand ICT initiatives in a strategic way within the Government Policy Framework to improve the quality of education and provide everyone, including those in deprived areas, with equal education opportunities. Advancement in ICT will have a profound impact on the teachers and learners in the process of learning in the near future. The development of new broadband communication services, the convergence of telecommunication with computers, and recent developments in the field of communication protocol has fostered numerous proposals for ICT use to support the teaching and learning environment. The integration of computers and communications offers unprecedented opportunities to the education system with its capacity to interact with each other over a vast geographic distance in a meaningful way. The growth of these communication and computer systems, their ease of use, and the power and diversity of information transfer allow teachers and students to access a world beyond the classroom. It has the potential to transform the nature and process of the learning environment. While the literature provides some evidence of the effectiveness of ICT in education, little is known about which learning strategies should be used for education and training. (Modelling ICT Development in Education Prof. Shyamal Majumdar, Ph.D. Head of Office, UNESCO-UNEVOC, International Centre, Bonn, Germany Email: s.majumdar@unesco.org).

ICT was introduced into the education system as early as 1980 when the Ministry of Education (MoE) established computer resource centers in zonal level and school computer learning centers in a few selected schools. There have been several ICT and ICT based initiatives by the Ministry of Education since then, as mentioned below.

Digital competency is the most recent concept describing technology-related skills globally. During the recent years, several terms have been used to describe the skills and competencies of using digital technologies, such as ICT skills, technology skills, information technology skills, 21st-century skills, information literacy, digital literacy, soft skills, and digital skills.

Considering the current situation and slowness of progress of ICT integration and penetration, it should be reconsidered on the ICT planning and implementation structure of the ICT strategic approach by the Ministry of Education across the provincial and zonal level authorities.

Accordingly, the Government has made policy interventions and investments at various scales to increase access to Digital education initiatives in the whole education system - both offline and online - to prepare students and teachers for a knowledge-based economy.

The Ministry of Education has an immense responsibility to ensure the smooth and appropriate functioning of the following key areas of ICT in the Education system towards a knowledge-based society.

i. ICT Education
ii. ICT in Education
iii. ICT Services (Connectivity, Devices and Maintenance)
iv. E content including learning material development and system development
v. Technology based innovations

Five key dimensions under the above areas have been identified for an effective and efficient ICT Integration in education;

1. The ICT curriculum
2. The ICT Infrastructure
3. Capacity development
4. Support the organizational change and leadership
5. The National ICT education policy and ICT implementation strategies

The Ministry of Education has identified five main development pillars to enhance and implement ICT in the education system systematically as below.

1. Digital Infrastructure
2. Connectivity
3. Content
4. Capacity Building
5. Innovation

Issues

Digital Infrastructure

Current ICT infrastructure status is as follows

i. 5700 school ICT labs
ii. 150,000+ PCs
iii. 109 Zonal ICT centers and 7 PICTECs
iv. Digital panel and interactive smartboard, tablet PC and dedicated connectivity for a few schools less than 5% out of the total schools
v. National Level Hardware and Network solution team to attend hardware, software, and network maintenance.
vi. National level ICT Hub initiative with a National Content Development Centre

Identified gaps and identified requirements on Digital infrastructure are as follows;

i. Lack of ICT laboratories and relevant infrastructure for 50% of schools (during the last five years).
ii. All existing ICT labs in schools need to be upgraded with new ICT equipment and technologies.
iii. Lack of Innovative and sophisticated ICT tools for schools to explore student creativity and innovativeness.
iv. There isn't any ICT infrastructure for school administration and management.
v. Lack of a device strategy (maintenance, replacement as well as to provide new devices and components) for General Education for a proper Infrastructure replacement mechanism.
vi. Lack of ZICTECs facilities for 14 identified zonal education regions.
vii. Some Zonal Level ZICTECs with geographical and administrative limitations of functioning due to established school premises.
viii. Inadequate physical and human resource infrastructure for ZICTECs and PICTECs to get the maximum benefits of the centers.
ix. Lack of effective courses in ZICTECs and PICTECs.
x. Inappropriate and inadequate internet and intranet facility for each and among school ICT labs, ZICTECs, PICTECs, and teacher training centers.

xi. Inadequate ICT infrastructure in Zonal and Provincial education department for an optimum management and administration environment.

Connectivity

Current status

This encompasses different areas, such as providing quality connectivity at an affordable price and opportunity for all users to obtain adequate facilities to connect with the internet and other resources to use their devices effectively. The connectivity will not only support merely internet surfing. It has broad objectives such as facilitating digitally-enabled education through educational e-learning materials real-time response systems that support multi-mode learning such as self, collaborative, project based, and blended learning. Further infrastructure may support the pre-service, in-service training of teachers, and continuous professional development of all trainers and administrative staff.
Identified gaps

At present, there is only one-third of schools out of the 10000 schools having an internet connection but not with adequate speed or data packages for all users in the schools can access. The Ministry of Education should ensure the maximum internet penetration in all areas island wide. Having this long-term objective following prior actions should be taken for the optimum effectiveness of the implementations.

i. There are some regions without any internet (7,169,533 Internet users in Dec/2018, 33.5% penetration), and there are nearly about 2500 schools that do not have any mobile signals (Data) to connect with.
ii. Law capacity of the Hardware and Network solution team established at the zonal level.
iii. Lack of appropriate training and transportation facilities to zonal level computer and network maintenance team to engage with their daily targets in a convenient manner.
iv. Lack of a proper financial model for internet bill payment at the school level.

Content

Current status

This pillar focused on the enhancement of technology integrated teaching and learning process and dissemination of knowledge among relevant stakeholders involved in general education with interactive and standard digital education content and resources and technology integrated teaching-learning process for both faces to face classroom and online approaches. Due to the COVID-19 pandemic, e-learning has become vital in teaching the learning process in a Blended approach, and also it has paved the way to consider the different types of e-learning models, including Blended learning, flipped learning and so forth.

The Ministry of Education has already taken action to establish a National Content Development Center with the purpose of developing the contents and e-learning systems to implement the National e-learning platform e-thaksalawa with connecting all ZICTEs and PICTECs in the provincial level to ensure the regional level e-learning penetration accordingly. In addition to that, the Ministry of Education has already initiated the following e-learning initiatives for the school community with classrooms' available facilities.

1. Introduce e-thaksalawa Learning content Management System with a wide range of e-content and activities from K1-K12.
2. Introduce e-thaksalawa LMS for virtual learning in remotely for schools and NCOEs
3. Introduce SMART textbook for grade 11 science subject By the Education Publication Department.
4. Introduce Digital panel/ interactive board with collaborative software and content library to enhance the virtual learning.

Identified gaps and requirements

The following requirements to be addressed by the e-learning initiatives to ensure the maximum utilization of technology with teaching-learning methodologies.

i. Lack of Content Accreditation, Acquisition and Development framework and e-learning policy
ii. Platform development/ Integration
iii. The requirement of improvements and enhancement of Learning Management Systems (LMS)
iv. Lack of Blended learning courses with the appropriate accreditation with the linked universities or institutes to deliver certificates
v. Lack of proper Training and Capacity development programs
vi. E-thaksalwa needs to be officially branded as the National platform for all e-learning requirements in the General Education system.

Capacity Building

Current status

Training and capacity building for all education stakeholders (teachers/principals/subject directors/all other subject experts) are crucial for the successful implementation of technology-enhanced learning in the school system without any discontinuation and disparity.

The benefits are not limited to students and teachers, but; school administrators, support staff, and parents are engaged through continuous capacity building and awareness creation efforts. Conducting continuous professional development programs for principals and teachers as well. It is essential to include ICT literacy as a compulsory component focusing on ICT based teaching and learning.

Identified gaps of Capacity Building and training

i. Lack of long-term ICT skills integrated training plan for General Education system
ii. Lack of a proper refreshment/ continuous knowledge up-gradation training plan for ICT subject teachers
iii. Lack of a long-term proper e-learning capacity development program plan for teachers involved with e-learning developments
iv. Lack of Comprehensive training plan for all teachers on technology integrated learning and Blended learning
v. Lack of a Proper training mechanism for all teacher centers, ZICTECs and PICTECs
vi. Lack of a long-term well-defined training and capacity development mechanism for all education leaders, including MoE officers/Provincial and Zonal Education officers, NCOE presidents, and Administrative staff of all schools.

Use of ICT for all levels in General Education System

Under ICT innovation, the Ministry of Education should have a comprehensive strategy to provide ICT for the management, administration, monitoring, and supervision of the education system. In other words, General Education should use information systems and other related systems to make service delivery more effective and efficient. This has to be strengthened and provide appropriate support in many ways.

Identified gaps

i. No proper structure established in the Ministry of Education, Provinces, and Zones to handle all levels of ICT matters.
ii. No adequate staff to implement, monitor, and supervise the projects and all the services offered under the government policy or the curriculum.
iii. Need for introducing online systems to 'Work from Home'.

Proposals

Digital Infrastructure

i. Develop a National Level Device Strategy (maintenance, replacement, as well as to provide new devices and components) for General Education for a proper Infrastructure providing and replacement mechanism.
ii. Identify a device providing mechanisms based on the population and the types of schools.
iii. Provide ICT infrastructure for all primary schools to enhance basic IT skills in the students of the primary circle (grade 1- Grade 5).
iv. Provide ICT infrastructure for all junior secondary grades based on the student population and the curriculum.
v. Provide ICT infrastructure for all senior secondary grades based on the student population, the number of classrooms, and the curriculum.
vi. Provide a capable device to teachers for the teaching-learning process.
vii. Provide ICT infrastructure for school administration and management.
viii. Providing adequate ICT infrastructure for all Provincial and zonal education officers.
ix. Establish new ZICTECs for 14 zonal education offices, which have not any ZICTEC at present.
x. Relocate and Restructure the ZICTECs with Geographical and Administrative limitations of functioning due to established school premises.
xi. Recruit a separate staff for ZICTEC from among the newly appointed graduates as IT assistants as a long term solution and take necessary measures to attach selected newly appointed graduates from 2020 as a short term immediate solution for the shortage of human capital, in particular, ZICTEC and PICTEC centers.
xii. Establish new PICTEC for the Uva provincial department of education.
xiii. Strengthen the Zonal level hardware and Network solution team by providing training/sophisticated tools and devices for hardware and network maintenance.
xiv. Provide transportation facilities and establish a proper financial model to serve the services provided by the Hardware and Network solution team for their duties done for the schools in the respective zonal education office.
xv. Introduce business models for all ZICTECs and PICTECs and empower all ZICTECs and PICTECs academic staff with knowledge of new technological integrations and innovations to develop and conduct creative course modules to address the global requirements.
xvi. Develop an ICT integrated curriculum from K1-K12 which satisfies the global requirements for SMART living.

Connectivity

i. Identify short-term, mid-term, and long-term comprehensive solutions for schools.
ii. Introduce a National level proper financial model for internet bill payment at the school level.
iii. Considering the immediate requirement of some of the key schools, a nominal rate for connectivity should be introduced with ISPs, and with the support of the Telecommunication Regulatory Commission (TRC) and over 3,500 schools are connected by this facility.
iv. There are nearly about 2500 schools that do not have any mobile signals (Data) to connect with. This has to be addressed through the TRC.
v. Implementation solution with service providers and all relevant stakeholders.
vi. Provide high-speed connectivity to all schools in Sri Lanka through appropriate methods at a concessionary rate.
vii. Develop a connectivity providing mechanism for all ZICTEC, PICTEC, Teacher Training Centers, Teacher Training Colleges, NCOEs, and all other training centers functioning under the Ministry of Education purview.

Content

i. Develop a Content Accreditation, Acquisition, and Development framework and e-learning policy for General education.
ii. Identify content needs and available resources, including in Sinhala and Tamil, and develop a content development plan and initiate content development with the support of the National Institute of Education.
iii. Plan and execute a Platform development/ Integration.
iv. The requirement of improvements and enhancement of Learning Management Systems (LMS).
v. Develop a "MOOC" system for online teacher training and capacity development collaboratively with National Institute of Education.
vi. Providing a full-pledged Hardware and Software applications to implement a comprehensive e-learning system for the whole education system.
vii. Develop a series of Blended learning courses with the appropriate accreditation with the linked universities or institutes to deliver certificates.
viii. Develop and execute a proper training and capacity development program and process.
ix. E-thaksalwa should officially be branded as the National platform for all e-learning requirements in the General Education system and work along with that to function under the National Content Development Centre once it is built.

Capacity Building

i. Introduce a minimum level of qualification standard on ICT when someone who recruits to the public sector. The level of standards can be varied depending on the level of ICT knowledge and skills required based on the profession he/she recruits.
ii. Develop a Proper training mechanism for all teacher centers, ZICTECs, and PICTECs collaboratively with the Ministry of Education, National Institute of Education, and National Colleges of education with a module-based approach.
iii. Develop a well-defined training and capacity development mechanism for all education leaders, including MoE officers/Provincial and Zonal Education officers, NCOE presidents, and Administrative staff of all schools.

iv. Develop a Comprehensive capacity development and training plan, including ICT skills and competencies-learning and Blended learning, administration, hardware, and network maintenance, and new technological trends and innovations.
v. ICT innovation.

Use of ICT for all levels in General Education System

i. Restructure the Provincial and Zonal Education set up in order to implement digital education in general education.
ii. Appropriately qualified staff should be allocated for those units.
iii. Allocating a reasonable amount of staff of ICT service and maintenance (ICT Support officer) to handle the day-to-day issues in schools and offices.

ICT innovation in schools

ICT innovation in schools and the educational system is powerful, and the world is constantly changing and needs learning opportunities to work for a better society and education system. Learning in schools is mostly organized in classroom settings where teachers are the primary agents for planning, pacing, and monitoring learning.
No class or even subject can desirably remain an "island of the past" (say in the next ten years) as long as students are immersed in new technology in other classes and subjects and, it need to motivate students for ICT based innovations for the 21st-century skills and for mechanisms to enhance learning for all students.
Research studies have found that possessing positive attitudes toward ICT impacts computer usage. According to Teo (2008), students' positive attitudes toward computer technology have a direct positive influence on their innovative use of ICT.

With having the futuristic vision ICT based innovations should be appropriately introduced rather than introducing ICT innovative projects with inappropriate mechanisms.

It is proposed to initiate ICT innovative activities with comprehensive planning and implementation mechanism at National Level.

Proposals/ solutions:

i. Develop a comprehensive methodology and 5-year action plan for enhancing student's innovation with the ICT integration approach;
ii. Research the global experiences and innovative ICT initiatives and adhere to those approaches with the Sri Lanka education system; and
iii. Providing necessary tools/devices and software to explore and doing innovative developments (IOT/AR/VR implementations/Robotics).

Abbreviations:

- ZICTEC - Zonal Information Communication Technology Education Center
- PICTEC - Provincial Information Communication Technology Education Center
- NCDC - National Content Development Center
- IOT - Internet of things
- AR - Augmented Reality
- VR - Virtual Reality

- LMS - Learning Management System
- MOOC - Massive Online Open Course

2.13 Present 13 Years Guaranteed Education Programme (Vocational Stream)

The 13 Years Guaranteed Education Programme was implemented as the V**ocational Stream; the seventh Advanced Level** subject stream with the objectives of *ensuring a smooth transition for school students to the world of work, generating the required labor for the nation's future workforce, minimizing the percentage of youth not in education, employment or training* (26.1%: DCS, 2016), *minimizing the post ordinary level dropout rate* (35%: MoE, 2016) and *reaching the targets 4.3 and 4.4 in the global Sustainable Development Agenda.* The **pilot project was initiated in 2017** with 42 schools (at least one in each district) and has expanded to 423 schools by 2020 (at least one in each educational division).

The number of schools and classrooms were determined in collaboration with the Provincial and Zonal education authorities and through a rationalization process based on the number of O/L failures in each zone, according to the medium of instruction. The capacity of the current schools ensures the accommodation of 44% of O/L failures. The next years' expansion is planned so that the stream will accommodate at least 80% of O/L failures.

The **Cabinet of Ministers approved the implementation of the programme on 07.08.2018.** The number of schools and students enrolled by the Stage of the programme is given below.

Stage	Number of Schools	Number of Students
Stage 01 (2017)	42	2,398
Stage 02 (2018)	154 Additional, Total = 196 (42 + 154)	6,042
Stage 03 (2019)	115 Additional, Total = 311 (196 + 115)	10,290
Stage 04 (Aug. 2020)	112 Additional, Total = 423 (311 + 112)	15,000 (Expected)

Structure of Study

<table>
<tr><th>Grade</th><th>Subjects and Module Followed</th></tr>
<tr><td colspan="2">General Profile of students

Majority: Students with low/ mediocre performance in Ordinary levels including those who are unqualified to proceed to Advanced Levels in other subject streams,
Students potentially competent in practical skills
Students with mental and physical disabilities

Few students with good performance in Ordinary levels, competent in cognitive skills such as memory and reasoning</td></tr>
<tr><td>Before enrollment to Grade 12 (Jan – Mar)</td><td>Three Month Orientation Programme
Leadership, Entrepreneurship and Career Guidance Programmes
(Pilot conducted in the Kandy District in February – March 2020)</td></tr>
<tr><td rowspan="3">Grade 12 (May – December)</td><td>Term 01 (May, June, July):
09 Generic Subjects (See Page 03)</td></tr>
<tr><td>Vocational Affinity Assessment</td></tr>
<tr><td>↓
Term 02 (September, October, November)
Three Vocational Subjects out of 26 (See Page 03 - 04)</td></tr>
<tr><td>Grade 13 (Jan – Dec)</td><td>One Year (Jan – Dec)

NVQ 04 Training at a Vocational Training Institute accredited by the Tertiary and Vocational Education Commission (See Page 05)
and On the Job Training
on a relevant course (See Page 03 - 04)
under one Vocational Subject of the three studied</td></tr>
<tr><td colspan="2">↓
Expected Profile of outgoing students
A professional with competencies (generic competencies and vocational skills) to work independently and as head of a team in the relevant occupation as certified by NVQ 04

End Point: After NVQ 04 assessment results
(Leaving certificate will be issued by school, NVQ 04 by TVEC)</td></tr>
</table>

List of Subjects under the Vocational Stream

Generic Subjects (9)

1. First Language: Sinhala/Tamil
2. Business English & Communication Skills
3. Literary Appreciation through Aesthetic Activities
4. ICT Skills
5. Skills related to Citizenry
6. Health & Life Skills for Social well-being
7. Entrepreneurship Skills
8. Career Guidance
9. Sports & Extra-Curricular Activities

Vocational Subjects (26)

Vocational Subject		List of NVQ 04 level NCSs
1	Child Psychology and Care	Child Care, Child Care Center Operator, Care Giver, Care Giver - Special Needs
2	Health & Social Care	Care Giver
3	Physical Education and Sports	Physical Fitness Trainer, Surf Lifeguard, Scuba Diver, Sports Masseur
4	Performing Arts	Make -up Artist, Presenter, Dancing (Kandyan), Dancing (Bharatha), Music (Eastern), Music (Western), Music (Karnataka)
5	Event Management	Event Operations, Beautician, Bridal Dresser, Make-up Artist, Hairdresser
6	Arts and Crafts	Gem Design Technician, Jewelry Maker, Leather Product Craftsman, Wood Carving Artist, Wood Craftsman, Batik Crafts Mat Crafts, Palmyra Crafts, Cane Crafts, Rush and Reed, Footwear Craftsman, Handloom Craftsmen
7	Interior Designing	Interior Decorator
8	Fashion Designing	Pattern Maker, Fashion Designer, Production Supervisor (Sewing), Tailor
9	Graphic Designing	Graphic Designer
10	Tourism and Hospitality Management	Cook, Waiter, Front Office Operations, Stewart/ Waiter, Food and Beverage, Professional Cookery, Housekeeper, Guest Relations Agent
11	Landscaping	Landscape Development Assistant, Plant Nursery Development Assistant
12	Applied Horticultural Studies	Plant Nursery Development Assistant, Agriculture Field Assistant
13	Livestock Product Studies	Agriculture Field Assistant
14	Food Processing Studies	Baker, Cake Decorator, Fruit and Vegetable Processor
15	Aquatic Resource Studies	Aqua Culture Technician, Fishing Vessel Skipper
16	Plantation Product Studies	Field Assistant (Tea), Factory Assistant (Tea), Field Assistant (Tea), Field Officer (Rubber) Assistant, Factory Assistant (Rubber), Field Assistant (Coconut), Field Assistant (Cashew), Field Assistant (Cinnamon)

17	Construction Studies	Construction Craftsman (Masonry), Tiler, Plumber, Construction Site Supervisor, Draftsperson, Wood Craftsman (Building), Construction Equipment Operator, Construction Equipment Mechanic, Domestic Plumber
18	Automobile Studies	Automobile Air Conditioning Mechanic, Automobile Electrician, Automobile Mechanic, Automobile Painter, Automobile Tinker, Motorbike and Three-Wheeler Mechanic, Agri Equipment Mechanic, Lithe Machine Operator, Heavy Vehicle Operator, Boat Building Technician, Reefer Container Technician, Outboard Motor Mechanic
19	Electrical and Electronic Studies	Electrical Motor Winder, Electrical Appliance Maintenance Technician, Electrician, Pneumatic Technician, Solar Photovoltaic Systems Technician, Automobile Electrician, Hydraulic Technician, Electronic Appliance Technician, Industrial Mechatronics Technician, Mobile Phone Repair Technician, Security and Surveillance System Technician, Radio, TV and Allied Equipment Repairer
20	Textile and Apparel Studies	Tailor, Industrial Sewing Machine Operator, Sewing Machine Mechanic, Quality Controller (Apparel Production), Production Supervisor (Sewing), Work Study Officer
21	Metal Fabrication Studies	Welder, Fabricator (Metal), Fitter (General), Machinist
22	Aluminum Fabrication Studies	Fabricator (Al), Aluminum Fabricator and Interior Designer
23	Art and Designing	Gem Design Technician, Jewelry Maker, Leather Product Craftsman, Wood Carving Artist, Wood Craftsman, Batik Crafts Mat Crafts, Palmyrah Crafts, Cane Crafts, Rush and Reed, Footwear Craftsman, Handloom Craftsmen, Lapidarist
24	Environmental Studies	Vehicle Emission Testing, Recycling Assistant, Solar Photovoltaic Systems Technician
25	Computer Hardware & Networking	Computer Hardware Technician, Computer Network Technician
26	Manufacturing (To be introduced in 2020)	Plastic Processing Machine Operator, Rubber Processing Machine Operator, Upholsterer, Refrigeration and Air Conditioning Mechanic/ Technician, Reefer Container Technician

Institutes MoE collaborates with for Vocational Training

Students are directed for NVQ 04 training to these institutes

1. Vocational Training Authority (VTA)
2. Department of Technical Education & Training (DTET)
3. National Apprentice and Industrial Training Authority (NAITA)
4. Ocean University
5. National Youth Services Council (NYSC)
6. National Crafts Council (NCC)
7. National Institute of Sports Science (NISS)
8. National Institute of Plantation Management (NIPM)

9. Construction Equipment Training Center (Under CIDA)
10. Operator Training Center (Under CIDA)
11. Center for Housing, Planning & Building (CHPB)
12. Computer Resource Centers (CRC)
13. Provincial Departments of Agriculture
14. Sri Lanka institute of Tourism and Hospitality Management (SLITHM)
15. Department of Agriculture
16. Gem and Jewellery Research and Training Institute (GJRTI)
17. Folk Art Center

Issues

- Although it looks effective on paper, the "vocational training" supposed to be provided during the 13th year in the schools does not provide organized vocational training for the students.

- General education should confine to providing education up to the secondary level and providing vocational education should be assigned to the Vocational education sector with broad-based facilities.

- It is expected that the school Principal coordinates vocational training with relevant vocational education officers working at the divisional secretariat, but it does not happen as expected. Vocational education officers have been entrusted with other responsibilities.

- Under the supervision of the school authorities, it has been planned to offer education and training on the Vocational sector. However, it has been observed that trainers from vocational institutions cannot attend such classes on a regular basis.

- Extensions of school career by one year (as 13th year) have not been able to secure many benefits as providing vocational education and training at school cannot be implemented efficiently and effectively.

- 13 years of stay in school make an extended one year in schools, and as a result, the student becomes overage when he/ she enters the university. In many countries, the average age at the time of entry to university is 18 years. However, a child in Sri Lanka could enter a university at the age of around 20 years since there is a delay in releasing A/L results and selecting students by the UGC.

Proposals

- The number of years in school should be brought back to 12 years, as was done previously.

- A proper and robust system should be established to provide entry opportunities to formal vocational education and training institutions for students who do not intend to pursue higher education through the A/L stream.

- Students should be guided to select alternative pathways in the vocational education sector and provide more opportunities to pursue higher studies without A/L by recognizing their work experience. The students should be enrolled in NVQ and SLQF to enable them to reach the same destination through alternative pathways.

- More institutions offering diplomas and degrees without A/L as an entry qualification should be established throughout the country to provide vocational education opportunities. New courses should be introduced in such institutions based on the demand in the world of work.

2.14 Teacher Development.

"Role of the Teacher;

Teachers should understand their own "lived worlds," and that of their students to achieve the best "lived worlds" they can. Teachers must take risks; expose themselves to resistant students; and work consistently to enable their students to become, in Greene's (1978) words, "wide awake." Introspection is useful in enabling students to become in touch with their worlds and empower them to choose and act on their choices. Thus, the teacher's role is an intensely personal one that carries with it a tremendous responsibility."

Greene, M (1978). Landscapes of Learning. New York: Teachers College Press.

Teaching is an on-going professional activity rather than something that can be mastered once and for all by acquiring a restricted set of skills. It needs to be refreshed and developed over time as new ideas and approaches towards teaching and learning are discovered. This emphasizes the need for development activities for staff to update and enhance their professional skills. The teacher appraisal system is an integral part of the process.

The teacher has to deal with the largely indefinable outcome called "helping every child realize his or her potential." The teachers define the potential, so everything depends on the teachers' commitment and dedication to doing everything they can for the children in their care.

Principals would have their respective vision for the schools, and they would expect their teachers to give full support in realizing the vision, but the ultimate test has to be whether each child realizes his or her potential to the fullest. Because of this exceptional characteristic of teaching, the morale, dedication, and motivation of teachers are paramount if the best student outcome is achieved.

Siong Guan Lim, Joanne H. Lim (2014). The Leader, the Teacher and You. World Scientific Publishing Co. Pte. Ltd.

Issues

- All Teachers are not adequately trained and professionally qualified.
- Inadequate social recognition for the teaching profession.
- Teachers are not properly recognized as a core character in operationalizing the systems of learning.
- Present teacher recruitment and deployment practices are not based on rational systems. Some believe that graduates who have failed to secure a job in other sectors join the teaching profession as they do not have an option.

Teacher Types and Numbers

	All Teachers				Professionally qualified Teachers				Professionally qualified Teachers %			
Province	Graduate	Trained	Untrained	Total	Graduate	Trained	Untrained	Total	Graduate	Trained	Untrained	Total
Western	25488	19989	547	46024	16445	19901	219	36565	65	100	40	79
Central	13980	20106	1555	35641	9016	19885	421	29322	64	99	27	82
Southern	14039	16048	514	30601	9725	15962	180	25867	69	99	35	85
Northern	7025	10751	382	18158	5130	10728	56	15914	73	100	15	88
Eastern	9014	13740	693	23447	5700	13671	193	19564	63	99	28	83
North Western	13441	15314	747	29502	8859	15127	423	24409	66	99	57	83
North Central	8124	9430	337	17891	4404	9276	151	13831	54	98	45	77
Uva	7749	11832	913	20494	5385	11814	93	17292	69	100	10	84
Sabaragamuwa	11400	13425	751	25576	6983	13355	150	20488	61	99	20	80
Grand Total	110260	130635	6439	247334	71647	129719	1886	203252	65	99	29	82

Proposals:

Professional development, including a licensing system, should be introduced for the teacher service. Establish a professional institute to accredit and issue licenses to teachers.

- Teacher training should be improved, and morale of teachers should be lifted; teachers should guide the students' future through developing their respective capabilities, ability to think for themselves, their desire to continue learning in life, and encouraging them not only in getting and receiving but in giving and contributing.

- Building up the standing of teachers and giving them every support to get their task done well is key to running a superior education system.

- Organize regular Teacher Conventions at national, zonal and divisional levels to share creative experiments among the teacher community.

- Introduce practices for Improving the teacher-child relationship.

- Consider offering an attractive benefits package to teachers. Since teaching is a unique profession, it may be established as a close service to offer due recognition and status.

- Use international experience on teacher development appropriately:

- Teacher Service should be recognized as the premier service among all education services, including the Sri Lanka Education Administrative Service (SLEAS), Principals' Service, etc. A classroom interaction requirement should be made a prerequisite for all appointments to the SLEAS and Principals' Service, and the like. The entry-level to all educational services to be the Teacher Service and recruitments to other services should be done by selecting eligible persons of the teacher service who possess adequate experience in the teaching

service and the exposure to the classroom. Deploying the officers selected to SLEAS to teach for two years does not fulfil the requirement as they go as "officers." All officers in education services should begin their careers with adequate experience in the classroom.

- Present designation of Teacher Advisors should be changed as Learning Process Coordinators and be managed and supervised by the NIE. They should share new knowledge with teachers and act as a link between NIE and the classroom. They should conduct model classes for the teachers and encourage the dialogue with the teachers on teaching methods, learning process and so forth.

- Teaching is not a mere profession – it should be a passion. In the process of education, it is particularly important to see that the student does not lose his/her joyfulness, spontaneity, or ability to be truthful without fear of consequence. There is much 'un-learning' to do on the part of teachers and parents if we are to achieve a truly transformative education system.

- It is necessary to work towards transforming teaching and pedagogical techniques and that teaching methodologies and student activities should not merely transmit knowledge but also contribute to the development of generic skills that are necessary for effective functioning in personal life, interpersonal relationships, employment/economic activities and society. Examples of such skills are critical, and divergent thinking, creativity, initiative, leadership, problems-solving, decision making, responsibility, and teamwork. Pedagogical methods can be improved by changing the nature of classroom activities, field-based projects, co-curricular activities, and the school's social climate.

  As pointed out in a UNESCO publication, there are four key strategies to provide better teachers:

  i. Attract the best teachers (motivated candidates into the profession who are driven by the satisfaction of helping students to learn, fulfil their potential and develop as responsible citizens)
  ii. Improve teacher education (impart skills needed to teach and use of pedagogical practices)
  iii. Get teachers where they are most needed. Effective teacher deployment system (provide incentives to teachers to accept postings in difficult areas, compulsory service in areas away from urban centers).
  iv. Provide the right incentives to retain the best teachers (salary structure, other motivation packages) (UNESCO, Teaching and Learning, 2014)

- Responsibility for teacher development to be entrusted to the NIE and promote school-based teacher development.

  - NIE to perform as an autonomous institution affiliated to a selected university which has a Faculty of Education. This would provide opportunities to share resources, career development, and other improvements, particularly academic interactions. The proposed affiliation may be done in line with Singapore NIE, which is affiliated to Nanyang Technical University as an autonomous institution. NIE Singapore awards various certificate programs and bachelor's degrees and post-graduate degrees to be conferred by the Nanyang University. NIE, Sri Lanka should be upgraded to award bachelor's degrees and Postgraduate Diplomas / Degrees at Master and PhD levels. Affiliation to a university will improve the recognition for the degrees offered by the NIE as the university could confer such degrees.

"The National Institute of Education (NIE) is an autonomous institute of Nanyang Technological University (NTU) in Singapore. Ranked 12th in the world and 2nd in Asia by the QS World University Rankings in the subject of Education in 2015,[1] the institute is the sole teacher education institute for teachers in Singapore. NIE provides all levels of teacher education, ranging from initial teacher preparation, to graduate and in-service programmes, and courses for serving teachers, department heads, vice-principals and principals. Its enrolment stands at more than 5,600 full-time equivalent students. The institute was first established as the Teachers' Training College in 1950."

- All National Colleges of Education (NCoE) should be managed by the NIE. When upgrading NCoEs as degree awarding institution, the degrees so awarded can also be conferred by the University to which the NIE is affiliated.

- Presently the teacher trainees for NCoEs are selected from the list of advanced level results after selecting students for the Universities. This system would give a devalued impression for the Teacher Trainees selected for NCoEs. The selection of Inmates for NCoEs should be made based on advanced level examination results considering their preference for admission to universities or NCoEs.

- NCOEs should be managed as an improved institution of former teacher training colleges. The inmates should be required to work according to a uniform timetable, including academic content, physical training, gardening, cleaning of the premises, meditating, and other religious activities, and inter-cultural programmes. This would bring about discipline among teacher trainees and to uplift their social behavior.

- The teachers who pass out from NCOEs were posted to difficult remote areas in the past to meet the shortage of teachers. They had to serve in such schools for 3 years. The teachers would like to continue this process if they are **released** after serving the 3 years and giving them a transfer to a place they prefer. In recent times teachers were reluctant to do so as their transfers have not been given for a long time.

- NIE should continue to be managed by its council under the Ministry of Education while the academic affairs are coordinated with the selected university.

- A senior officer should be appointed as Director (Teacher Development) under the Ministry of Education. He/She should be entrusted with the overall coordination of the process with all relevant institutions.

  Center for Excellence in English Education (NCOE) at Peradeniya should be upgraded with modern technology and providing high caliber professionals to the teaching staff. All English teachers should be provided with adequate training on a residential basis for effectively teaching English.

TEACHING AND LEARNING ENGLISH IN PRIMARY SCHOOL

When students acquire a language, they will have to listen to it first. Then they will have to speak, answer questions asked, identify the letters, learn their sounds, and then put the sounds together to pronounce a word. Thereafter, learn to read words. Finally, to write letters and words.

However, in the Sri Lankan Classroom, the students do write letters first, which is very unfair by the students. They do not get the opportunity to listen to proper English.

Teaching and learning English have to undergo a huge transformation in the primary grades. The students must be provided with the opportunity of engaging in fun activities. E.g. – Singing rhymes, songs, acting, games and so forth.

Storytelling is a very useful technique to teach English in primary grades. Students enjoy stories; they learn a lot of new vocabulary through stories, and also students' imaginative and creative skills can be enhanced by storytelling.

Further, the students' reading skills should be sharpened by getting them to read those stories which they listened to. Storybooks with good language and colorful pictures can be used for this purpose. E.g. Ladybird storybooks

Relying on Teachers' Professionalism

One can join the teaching profession by completing the required training and certification, but becoming a professional teacher means something more than that.

Being a professional means conducting oneself according to the highest standards giving the best effort inside and outside the classroom. Professional teachers plan thoroughly for every lesson and class. They have good attitudes towards the teaching profession more as a service than a career to earn a living. They undergo continuous professional development to update themselves throughout their career.

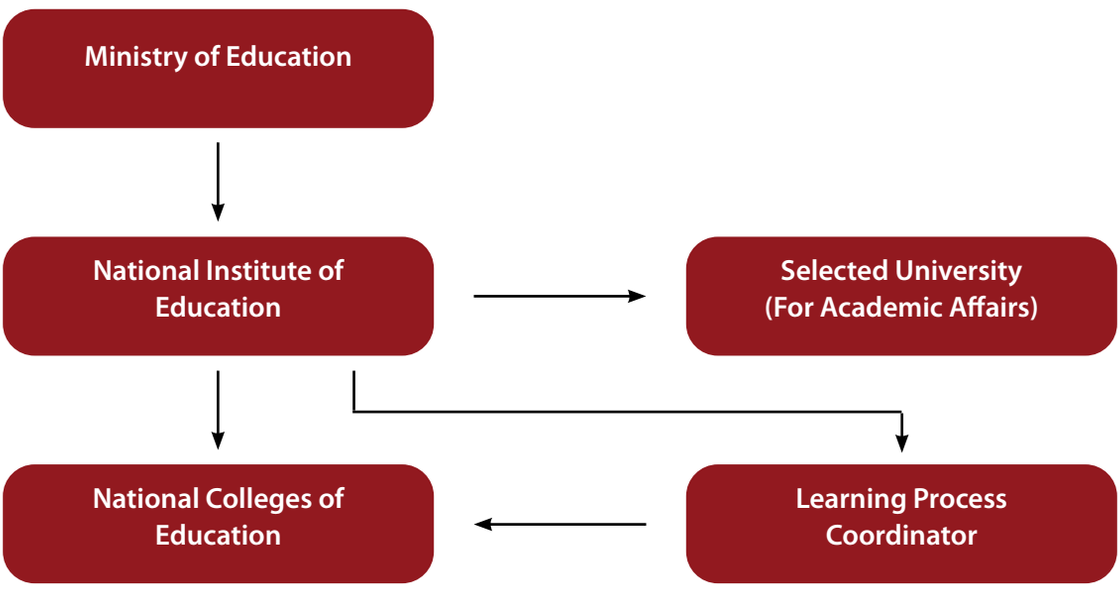
They should have the ability to design the tests and assessments to capture and develop the knowledge and skills of students through them. They change, amend, and improve their teaching methodologies based on the feedback they receive from students. They maintain transparency in assessing students. They do not favor any students in assessments.

Professional teachers apply their assessment literacy to analyze student performance to identify the trends in students' strengths and weaknesses. They make use of this information to improve student performance. Professional teachers can teach their subject to any grade in school and enjoy teaching. They do not teach only the bright students, but they cater to the individual differences of students and help them develop from their positions. They maintain a good rapport with all students, and they do not hate students because they are weaker. They know how to guide students for a desirable result.

SBPTD – School Based Professional Teacher Development

In the MoE, there is an ongoing project going SBPTD, a Commonwealth of Learning Project. In this project, a set of competencies that the teachers should have during different stages of their careers is very well defined. It is called the "teacher competency framework."

Proposed Structure for Teacher Development



TEACHING AND LEARNING ENGLISH IN PRIMARY SCHOOL

Trends and Issues in Teacher Education

1. Building a high-quality education system relevant to 21st century social and economic realities has become a top priority for most governments and nations. Reforming education systems within a context of ever-deepening globalization without first understanding its present challenges is not judicious. These challenges include:
2. Central to the idea of a quality education system is the quality of the teaching provided by teachers to students. As education systems have to cope with the impact of the new economy, so does the profession.

Redefined professionalism

1. There is an urgent need to recognize teachers' work as complex and demanding, and improvement in teacher quality requires a re-conceptualism of how we repair a new generation of teachers. Simultaneously, a change in the form and function of teacher preparation is based on a strengthened or redefined professionalism

Pathways into and Preparation for Teaching

Innovative pathways in recruitment are required to meet the demands of a high-quality and representative teaching force. To support the needs of a diversifying student population, teacher preparation programmes should:

- broaden their entry requirements to diversify the teaching corps and better represent minority ethnic and cultural groups, and support students who use a different language from

Partnerships for Teacher Education

1. New designs for teacher education will need to rest on strong partnerships in the context of meaningful involvement by key stakeholders in the education process.
2. Successful partnerships start with sufficient government support and resources and attract resources from the private sector to continue and deepen the partnership among university faculties, schools, teachers and relevant stakeholders outside education. More importantly, successful partnerships must:

(Source: A Report Commissioned by the International Alliance of Leading Education Institutes)

2.15 Principal as the Leader

- Principal to develop the vision for the school followed by a long-term plan
- Motivate teachers to extend full support to realize the vision and the planned activities lead by the principal.
- Enhance capacities of principals through suitable training and development, including foreign training for selected principals and teachers.
- Due recognition to the principal should be awarded. An attractive benefits package should be offered to motivate the principals.
- The principal may Coordinate with entrepreneurs in the area and obtain their views on the skills needed in the employment market and other expectations from the students.
- School-based reforms should be entrusted to the principals and implemented with the District Director of Education's concurrence.
- Review the career development, and the social behavior of past pupils, and lessons learned should be used to improve the school's behavioral patterns. The violence of past students, including inhuman ragging at

universities, should be avoided by inculcating proper values to the school students.

- Suitable criteria for the assessment of principals' performance should be developed, and students social behavior may be included as an indicator in the assessment criteria.

- The systematic placement and transfer process of principals should be developed and implemented. Principals may be transferred after five years from one school to another. Those principals who have delivered good results may be asked to take over another school with poor performance and request them to improve the standards of the school assigned to them.

2.6 Classification of Schools

The principle used in the classification of schools at present is a method that has been in use since the early 1980s. This classification has prescribed a limited set of qualifications, which applies to appointing the heads for the schools. This has given rise to several issues when selecting suitable principals of the Sri Lanka Principals' Service for primary schools that need to maintain quality education and administration with a higher number of students. This classification also affects obtaining physical resources and financial facilities such as quality inputs and programmes that could be implemented in schools under the Enhanced Programme for School Improvement (EPSI). Thus, the school community has eventually created a deformity in the system through an unfair attempt to forcefully drag their school to create the upper classes within this classification. Primary schools and the schools with a smaller number of students receive less facilities, which go through a vicious cycle. Therefore, it is evident that continuing the existing school classification does not contribute to developing high-quality, strong schools with a productive administrative structure in the current system.

Existing School Classification

This classification is done considering the number of grades and academic streams in a particular school.

i. 1AB Schools – Schools with grades 1- 13 or 6 -13 with the science stream for the G.C.E. Advanced Level.
ii. 1C Schools – Schools with grades 1 -13 or 6 – 13 with G.C.E. Advanced Level except the science stream.
iii. Type 2 Schools – Schools with only grades 1-11
iv. Type 3 Schools – Primary Schools with only grades 1 – 5

The number of schools in each province under the classification is given below.

	Type of School				
	1 AB	**1C**	**Type 2**	**Type 3**	**Total**
Western	202	249	452	453	1356
Central	116	319	457	625	1517
Southern	148	220	331	411	1110
Northern	106	122	289	470	987
Eastern	105	186	341	482	1114
North Western	113	254	414	469	1250
North Central	64	132	221	398	815
Uva	81	186	190	341	898
Sabaragamuwa	109	179	430	410	1128
Total	1044	1847	3225	4059	10175

Source – School Census 2018 – Ministry of Education

According to this classification, when the distribution of schools is considered, it can be seen that there are 10% 1AB schools, 18% 1C schools, 32% Type 2 schools, and 40% Type 3 schools throughout the country.

Issues

It can be observed that the prevalent method of school classification harms the qualitative development and the school systems' administration.

- Principals are appointed based on the classification of schools. To upgrade their service grade in the Sri Lanka Principals Service (SLPS), they engage in a futile attempt to uplift the school's position in the classification. They attempt to upgrade the schools by introducing Advanced Level science stream without fulfilling the requirements to upgrade the schools as 1AB category.

- The principals' allowance is also paid based on this classification. They attempt to upgrade the school with the hope of securing the higher allowance.

- 1AB schools have recognition as "better schools" within the school community, and this attitude adversely affects the education system as student centered quality education is not considered as a criterion for the upgrading.

- This classification also prevents the opportunities to appoint a principal with a higher grade in the service to a primary school. Even if it is required to appoint a qualified principal to a particular school, it may not be possible to do so due to the present system of classification.

- Since this classification ignores identifying schools as primary and secondary, which is the most suitable system in education, it had been challenging to maintain any secondary school within a network of primary schools in a given feeder area.

- As a result, small schools in rural areas face a threat of closing down due to the lower number of students and a shortage of qualified principals and teachers.

- Most of the school development programmes implemented at present to develop schools mainly cater to the 1AB schools, which in turn creates a trend to highlight schools as "popular Schools" at both provincial and National Levels.

The present system of school classification can be identified as a major drawback towards establishing quality schools in the 21st century.

Proposals:

The National Education Commission has recommended in its report of 2018 and other connected sub reports that the existing school classification system should immediately be changed since it does not suit the present-day requirements. There were recommendations to consider establishing two types of schools instead of the present system such as primary and secondary. It is proposed to establish 1000 national schools as secondary schools.

- Categorizing all schools as primary and secondary schools, enables to create a network of primary schools and identify a secondary school for any selected network. This system also may help to resolve the competition for few schools known as 'Popular Schools'.

- Once the schools have been networked, the Advanced Level subject streams need to be re-analyzed. Accordingly, the schools identified as eligible national schools should be allowed to teach respective subject streams. Feasibly re-structuring the Advanced Level classes, would help minimize the enormous waste of resources in the education sector.

- This proposed system would help to regularize the school administration and enable them to carry out school-based management in a rational system manner.

- Appointing principals, teachers, and non–academic staff to schools should be done on based on need. It is recommended to appoint principals of higher grades with the required qualifications to primary schools. Special incentive packages may also be offered to such principals of primary schools as the students' main development occurs at this level.

- This proposed system also would pave the way to create the development of high-quality secondary schools in a planned manner and to provide more quality educational opportunities within the school network and to reduce competition for popular schools among the school community at the regional level.

- The proposed classification enables us to focus more on primary schools and have a fairer method in providing required physical and human resources to such schools. This would help to create a network of primary schools that assures to provide a high-quality primary education.

- Action should be taken in a phased-out manner to delink present primary sections in secondary schools allowing the primary schools to run independently.

2.16 Sharing Resources between Schools.

- A few schools should be selected to share the resources including human and physical.

- Divisional Director Education may discuss with the principals of selected schools to arrange for sharing resources. Team of Principals.

- Competition among schools on examination results and other awards should be discouraged and promote them to work with other schools.

- Ministry of Higher Education should similarly develop detailed curricula.

Sharing Physical and Human Resources between Schools

Introduction

A resource sharing model as a practical approach to address the disparity in the use of resources in schools is a key requirement in general education.

Data analysis depicts that about 90% of the physical resource requirements have been fulfilled as a direct result of several attempts taken in line with the government's national goals. Water supply, electricity, sanitary facilities, and classroom space are among the key requirements fulfilled. However, every child does not have an equal opportunity to reach high quality physical resources in their learning process. For example, a high level of disparity can be observed concerning laboratory facilities, computers, technological labs, and supply of the required apparatus to such laboratories.

Supplying of required equipment for the schools with less than 50 students, which is about 15% and less than 100 students, about 30% has become an issue related to economic viability. However, it is imperative to have a practical approach to ensure access to such facilities for every child. In 1981, the concept of "school clusters" was introduced as an approach to address this disparity, but it did not continue as an efficient approach due to various reasons, and therefore, it is prudent to introduce a new practical "Resource Sharing Model" among schools located in a given area. The provision of minimum physical infrastructure for the schools is a felt need when considering the disparities. Although minimum physical resource requirements have been fulfilled in the schools in compliance with the national goals/dimensions, it can be observed that some schools do not possess adequate facilities. As a practical solution, it may be worth considering the sharing of resources among the schools as a short-term approach.

It is necessary to provide the need for higher order facilities required for the learning process to all schools as analysis shows that these facilities are centered in 1 AB and 1C schools.

The following table clearly shows the details of disparity.

Province	Number of schools According to the type				Number of schools that have higher order facilities				
	1AB	1C	T2	T3	OL Science Labs	A/L Science Labs	ICT Labs	Mahindodaya Labs	Playgrounds
Western	202	249	452	453	488	186	608	131	878
Central	116	359	457	629	376	111	571	155	834
Southern	148	220	331	411	424	143	442	110	821
Northern	106	122	289	470	251	92	289	91	526
Eastern	105	186	341	482	318	92	392	104	515
North Western	113	254	414	469	453	102	423	127	929
North Central	64	132	221	398	235	59	299	83	630
Uva	81	186	290	344	335	77	331	88	529
Sabaragamuwa	109	179	430	410	320	100	445	113	691
Total	1044	1847	3225	4059	3200	962	3800	1002	6353

Source: School Statistics 2018, Ministry of Education

Analysis of the data given in the above table shows that it is prudent to create a feasible group of schools considering a school at the center with ample facilities, to make an opportunity available for the other schools to share the available resources mutually. For instance, the need for a Resource Sharing Model can be justified with the following table that depicts the availability of G.C.E.(O/L) Science laboratories in each province.

Province	Number of schools with O/L classes	Number of Laboratories for O/ L	As a percentage (%)
Western	903	488	54
Central	892	376	42
Southern	799	424	53
Northern	517	251	49
Eastern	632	318	50
North Western	781	453	58
North Central	417	235	56
Uva	557	335	60
Sabaragamuwa	718	320	45
Total	6116	3200	52

Source: School Statistics 2018, Ministry of Education

It clearly shows that 50% of the schools do not have G.C.E.(O/L) Science laboratories, even though it is essential to have lab facilities to implement the 6-11 Science syllabus. This situation makes it evident that it is advisable to have a Resource Sharing model in a network of schools that paves the way for maximum utilization of the resources by all participating schools.

Sharing of human resources among the schools.

At present, fulfilling the requirement of teachers to all schools in a rational manner has become a serious issue. Appointing required teachers for the schools located in difficult areas has become a severe challenge.

The existence of a huge excess and a deficiency of teachers simultaneously in the school system seems to be difficult to address even with the recruitment of new teachers. Analysis of statistics shows that several attempts to find a feasible and practical solution to this issue had failed drastically over the past years. In 2018 the teacher student ratio had been 1:17. Thus it is essential to introduce a mechanism where the teachers can be used as an exchangeable human resource rather than recruiting new teachers.

Province	Teacher deficit (Total)	Teacher Excess (Total)
Western	10875	7244
Central	9152	6335
Southern	7079	4929
Northern	6335	3196
Eastern	8228	3325
North Western	8665	4736
North Central	4148	3067
Uva	5212	4116
Sabaragamuwa	6788	5036
Total	66512	41512

This draws our attention to the total excess of teachers being 41512 while the deficit remains at 66,512. It is required to identify the excess teachers and have a pool of teachers that could be deployed based on service requirements.

Issues

- Physical resources are centered in a few schools, whereas several other schools do not have access to such facilities.

- Since a mechanism for mutual sharing of resources among schools has not been legalized/ the zed principals are not given authority to implement such a programme even with the mutual consent of fellow principals.

- Since there is no method to balance the academic and non-academic human resource in schools, issues pertaining to the excess and deficiency of teachers have escalated to a peak where it has become almost impossible to manage unless a strong mechanism is applied.

- The distribution of schools should be done more reasonably. It is imperative to identify the schools with declining demand for student admission, thus mitigate the waste of resources through a set of criteria and streamline the school system.

Proposals

It is imperative to introduce a Resource Sharing Model to address this issue.

- Initiate a programme to streamline the school system based on a set of identified criteria to pave the way for maximum utilization of resources.

- A network of schools is created based on a "center school" identified through the following criteria, enabling them to share resources more feasibly.

    - The geographical location of the Schools.

- The social, economic, and cultural background of the school.
- Availability / Abundance of the physical and human resources of any school and the neighboring schools.
- Fair flow in the pattern of sharing resources in the Network identified.

It may be considered to introduce a legal system for sharing resources among schools identified based on the above criteria as a mutually dependent network.

This model can be recommended to be incorporated as an amendment to the circulars already issued for the Enhanced Programme for School Improvement (PSI).

2.17 Quality Assurance & Accreditation

Existing QA practices in Sri Lankan schools

The school QA process in the Sri Lankan education system has a long history since the British era. It seems that various mechanisms has been implemented for several years. Existing QA process introduced on 31/2014 circular and guideline of "Our school; how good is it?" in 2015. The circular included the roles and responsibilities of schools, Zonal Education Offices, Provincial Departments of Education, and Ministry of Education.

QA process is mainly divided into two methods; internal evaluation and external evaluation. The main purpose of internal evaluation is to empower each school to understand their performance and external evaluation support to develop quality in schools. Internal evaluation in schools has been carried out by School Management Committees in the form of self-evaluations. The strengths and weaknesses of the schools are identified by zonal, provincial, or national level teams.

Both internal and external evaluation processes are conducted based on the 08 criteria given in the following Table.

Table 1: Themes, Standards, Criteria and Indicators of the present evaluation process

Themes	Standards	Criteria	Indicators
Students' achievements	2	5	35
Teaching learning and evaluation	2	4	30
Formal curriculum Management	1	8	25
Co-curricular activity	1	5	14
Students' welfare	1	9	22
Leadership and management	1	16	45
Physical and human resources management	1	8	26
School and community	1	5	13
Total	10	60	210

(Ministry of Education, 2014, p. 7)

Issues

- Present QA system practiced by the Ministry of Education seems like a routine and bureaucratic process. It was observed that relevant officers devote their time and energy to collecting data and filling formats. Such formats are added into the files, and the process almost ends there.

- The system does not provide much room to assess the tangible changes in the quality of education over a given period.

- There is also a lack of a follow-up system to take appropriate action if the quality is found below the accepted levels.

Proposals

- It is vital to revisit the present system of QA practiced in the general education system and improve its application more pragmatically.

- The school communities, including principals, teachers, and parents, should be actively involved in the QA process and ensure that tangible improvement occurs.

- It is recommended to develop an integrated system of QA for general and post-secondary education. The present QA system adopted by the university system should be broad-based and ensure the measuring criteria of QA at all levels are consistent. Simple and SMART KPIs should be developed and involve all stakeholders in the process of QA.

- Draft Act on Quality Assurance in Higher Education, which has already been prepared, may incorporate general and vocational education sectors into it.

- Recommend to set up an autonomous institution on QA, which should implement pragmatic practices to ensure the improvement of quality in the entire education system and to ensure achieving the quality of education on par with international standards and the challenges of the 21st Century.

2.18 Improving Planning and Management of Education System.

Reorganization of educational planning & management systems is an essential priority of the reform process.

Issues:

- The present organization system in education is fragmented, and as a result, the roles are not clearly defined.

- Ministries responsible for general education, vocational education, and higher education seem to be involved in day to day implementation, and as a result, the major role of the ministry is given less priority.

- The ministries should concentrate on the formulation of national policies, interagency coordination, coordination with international agencies, monitoring the results, and ensuring quality of education.

- For example, the Ministry of Education should not be involved in matters such as the admission of children to schools, transfer of teachers, and the provision of resources to schools.

- The implementation of policies and programmes under general education, including day to day activities, should be entrusted to a Department of Education which should be established under the Ministry of Education.

- A Director General should head the proposed Department of General Education, and the main implementation areas should be assigned to the Deputy Directors of General and Directors. Proper identification of functions and responsibilities of these officers should be undertaken, and clear job descriptions should be issued to all the officers.

- Since general education is a devolved subject to the provincial level, it is essential to maintain a clear and continuous relationship between the national and provincial levels. The provincial secretary of education should be assigned the broad functions related to overall provincial programmes and projects. The provincial Directors of Education should be empowered to implement all nationally decided education policies and monitor implementation at other levels including divisional and school levels.

- When appointing provincial Directors of Education, the concurrence of the National Ministry of Education should also be obtained. The provincial Director of Education will have dual responsibility and report to the National Ministry of Education and the Provincial Ministry of Education. The gazette notification issued by the Public Service Commission on the appointment of Provincial Directors of Education may be amended to incorporate this proposal.

- The geographical area of jurisdiction of the Educational Officers at sub national levels should be demarcated in line with the country's general administrative system. It is recommended to establish Educational Offices in administrative districts and divisions. Accordingly, the District Director of Education and Divisional Director of Education should be appointed in the respective administrative districts and divisions.

- The present zonal level education offices should be abandoned, and the officers working in the zonal offices should be appointed to district and divisional offices using a proper system of selection.

- The Divisional Director of Education's office should be strengthened by providing the required human and physical resources. These offices should undertake continuous inspection and monitoring of the school system. Similarly, the Ministry's vocational and higher education sectors should be entrusted with policy formulation, inter-agency coordination, monitoring, and other related responsibilities while implementation of programmes should be assigned to the respective institutions under the ministry.

- The vocational sector may be reorganized by introducing courses required for the employment market.

- Implementation of higher education programmes should be assigned to the UGC and universities. Present traditional systems in universities should be transformed to address the challenges of the 21st Century.

- National Education Commission (NEC) plays a significant role in the congruence and integration of general, vocational, and higher education. It is recommended to introduce an amendment to the NEC Act to include a presentation of the NEC recommendations submitted to the President to the Cabinet of Ministers. Once the Cabinet of Ministers approves the recommendations, it should be considered as national policy, and the action

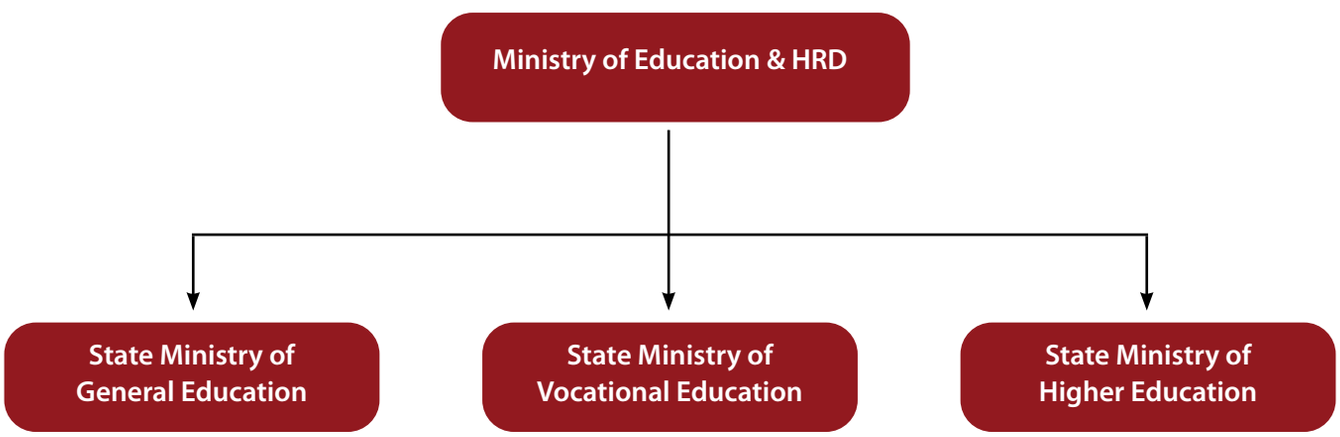
should be taken to direct respective institutions to implement the policy recommendations and to change the legal framework through ensuring to obtain the parliament approval wherever necessary.

- Present three ministries on education should be amalgamated, and the new Ministry may be re-designated **as Ministry Education and Human Resource Development.** The ministry should be assigned with the integrated responsibilities of general, vocational, and higher education, establishing one ministry to cover all three sectors. The Ministry should be under a Cabinet Minister, and three state/deputy ministers may be appointed to oversee the three sectors. A senior person with adequate capacity may be appointed Secretary of the Cabinet Minister while State Secretaries/ Additional Secretaries may be appointed to manage the sectoral areas.

The Indian model may be followed when establishing one ministry with all three sectors.

"The **Ministry of Human Resource Development of India** is responsible for the development of human resources in India. The Ministry is divided into two departments: the Department of School Education and Literacy, which deals with primary, secondary and higher secondary education, adult education and literacy, and the Department of Higher Education, which deals with university education, technical education, scholarship etc."

Proposed Organization Structure for Ministry Education and Human Resource Development



2.19 Regularization of Private and International schools

Background

In the latest survey that was carried out by the Ministry of Education between 2015 and 2019, it was found that there are 392 International Schools in Sri Lanka with a total teacher population of 13,639 catering to 140,753 students. It is a known fact that these schools vary in their quality and cater to different segments of society. While most schools adopt the curricula provided to them by awarding bodies such as Edexcel and Cambridge for examination classes, they tend to have their curricula at primary and junior levels. The oldest International School in Sri Lanka follows the IB curriculum. There is also an emerging trend for some schools to adopt the local curriculum in the English medium.

Categories of International Schools

In the current context, there are 3 categories of International Schools: i) schools following an international curriculum only; and ii) schools offering both international and local curricula, and iii) schools catering to the local curriculum only. At present, these international schools are registered as investment projects under the Board of Investment without any concurrence from the Ministry of Education.

- The International Schools of Sri Lanka (TISSL) consist of the 24 leading International Schools in Sri Lanka. TISSL caters to approximately 50,000 students island wide. The fact that over 95% of the students attending TISSL schools are Sri Lankans emphasizes that this sector makes a significant contribution to the education of Sri Lankan children. These institutions are self-funded and are not a burden on the state and do not currently come under the Ministry of Education's purview as there is no regulatory system in place.

- Among the schools that offer international curricula, some schools produce outstanding OL/IGCSE, AL, and IB results. Almost all those who have completed secondary education at these institutions pursue higher education, with many entering highly rated Universities around the world. Many of these students have also been extremely successful in sports and co-curricular activities at both national and international levels. Such international schools charge relatively higher fees, but they tend to bring in good practices to Sri Lanka and have the capacity to set significant trends. Further, such schools play a crucial role in attracting foreign investment to Sri Lanka by catering to the children of the expatriate community.

- The schools that offer the local curriculum in the English medium are less expensive and attractive, especially to those unable to find places in the leading government and private schools. These schools have been able to cater to the much needed English medium education, which is in demand in the country.

- All International and Private schools should understand that religion, culture, values, and traditions are the value propositions that give Sri Lanka its pride and that they should be preserved at all times. Therefore, it should be mandatory for these schools to incorporate the teaching of Sinhala/Tamil, Religion, and the History of Sri Lanka.

- To overcome the current restrains due to the 1961 Act of Parliament and until such Act is amended, it is recommended to establish an Authority/ Bureau/ Working Group (hereinafter referred to as the 'Body') based on Private-Public Partnership /PPP) approach.

- All international schools should register in the Ministry of Education, and the proposed Body is placed under the Ministry of Education's purview. It is also suggested that, as an interim measure, this Body may function with the Cabinet of Ministers' approval until new legal provisions are introduced. This Body may be organized with the participation of the Ministry officials, key members of TISSL, and representatives of the corporate sector. This would facilitate the autonomy of such institutions and encourage them to uphold and respect the Sri Lankan cultures, traditions, and values, and maintain quality standards.

- Introducing a regulatory system for International schools is essential, and hence relevant legal changes should be implemented via an Act of Parliament. Since the procedure of passing of an Act by the parliament takes time, immediate action should be taken to obtain the approval of the Cabinet of Ministers for the regularization of international schools and implement the system.

Pirivena Education

Introduction

The word **"Pirivena"** is also used to refer to the monasteries of monks and nuns and later pirivena were established in association with Buddhist temples for educational purposes.

The Pirivena tradition dates back to the 1st century CE when the Mahavihara and Abhayagirivihara were commissioned through royal patronage. Other Pirivena institutes were created throughout the island during the rule of successive kings. The Sri Lankan rulers and the Sangha (monastic) community considered the education of monks and lay people within a Buddhist society to be of utmost importance. The resulting Pirivena education significantly assisted in the propagation of Buddhism not only locally, but also overseas.

As Buddhism declined in India, Buddhist universities like Nalanda also deteriorated, and the traditional form of education soon died out there. However, despite numerous Indian invasions, Pirivena education prevailed in Sri Lanka over the centuries. The syllabus for both monastics and lay people was originally separated into two streams: the "Suta" part included such subjects as languages, religion, philosophy, history, economics, and geography, while the "Sippa" included skills such as agriculture, astrology, and carpentry. The system remained highly standardized and methodical and was sought by visiting scholars from countries like Thailand, Cambodia, and Burma even as recently as the 15th century.

Currently, there are three levels of Pirivenas in Sri Lanka, serving both monks and lay people. At primary (mulika) level they offer five years of education, during which the students are taught six compulsory subjects—Pali, Sanskrit, Sinhala, English, Tipitaka studies and Mathematics and six optional subjects—History, Sociology, Health Science, General Science, Geography, and Tamil Languages—followed by an examination enabling them to study at the senior (maha) Pirivena. The students continue the six subjects they studied at the primary level at the senior level, with additional studies in subjects like philosophy, the history of religions, linguistics, Ayurveda, and astrology. It is intended that with this advanced knowledge, the Pirivena students will be able to gain entrance to university-level Pirivena institutes. The Pirivena Vidyayathana, or affiliated higher educational Pirivena, were first recognized by an act of the Sri Lankan government in 1957, and in accordance with this act, in 1959, the Vidyodaya and Vidyalankara Pirivenas of Colombo was given university status. At present, there are 794 Pirivenas on the island, serving a student community of approximately 62,000.

The weakened pirivena education with the Europeans' arrival in the 16th Century was reestablished by the dedicated effort of the Most Ven.Asarana Sarana Saranankara Sangaraja Thero and the modern pirivena Institutions were established by the Pirivena Education No. 64 of 1979.

The current Pirivena education applies to Bhikkhus (monks) and lay students who wish to study in pirivena. These pirivena mainly offer Buddhist studies based on the Tripitaka (three main sectors) and entrusted to the propagation of the Dhamma and to provide education for the Buddhist monks about Buddhist philosophy and culture also subjects such as History, Sinhala, Pali, Sanskrit.

Issues

- The Pirivena Education Act No. 64 of 1979, which was enacted 41 years ago, and the Pirivena Education Regulations No. 1 of 1980 introduced thereafter have not been amended to meet the challenges of the present-day world.

- A weak system of institutional arrangements including planning, development, and accounting and the like. in the Pirivena education system functioning as a branch of the Ministry of Education.

- Lack of a formal system for recruiting staff officers required to carry out the administration and management of the Pirivena education system.

- Failure to implement service minutes for Pirivena education administrative officers, Parivenadhipathi (Pirivena head), In Service Advisors and Pirivenaacharyas (Teachers).

- Non-availability of similar privileges offered to the teachers of government schools belonged to the Teacher Service.

- Lack of a formal program to provide Sanitary and infrastructure facilities for Pirivenas and Pirivena training institutes, building facilities, furniture and equipment, laboratory and computer laboratory facilities, electronic printing facilities, library facilities, aesthetic equipment for lay students, playgrounds and multipurpose equipment, technology audio-visual technology units, subject development units .

- Existing curriculum and testing systems have not been restructured to meet the technological and other challenges of today's world.

- In the current Pirivena curriculum and syllabus, there is a lack of focus on the development of skills, practices of principles, and preaching skills for the qualitative development of clergy students.

- The objectives of the existing Pirivena training institutes have not been improved to suit the present world and the education system.

- Lack of a capacity building program to improve the Pirivena training for the Kruthyadhikari, Parivenadhipathi, and Pirivenacharya who are currently employed in the Pirivena education system.

- Curricula and courses of Pirivena training institutes have not been updated.

- The registration and distribution of Seelamatha Educational Institutions which have been approved by the government not been equitably established at the district and provincial levels.

Proposals:

- More than 40 years have passed since the Pirivena Education Act No. 64 of 1979, and the Pirivena Education Regulations No. 1 of 1980 were enacted. Since the amendments to the Pirivena Education Act have not been incorporated into the educational reforms, institutional management structures, fiscal management policies. Pirivena education cannot face the challenges of the present day. The Pirivena Education Act should be amended to meet the challenges in the world today.

- Establishing a Department of Pirivena Education and recruitment of executive officers for the administration. This is facilitated by calling applications from the Heads of Pirivenas and Pirivena teachers and conducting an examination and interview.

- Appointing In-Service Advisors by calling applications from the practicing Pirivena teachers, recruiting them through an examination and interview, training them, and employing them on a full-time basis.

- Even if the chief incumbent is engaged in another occupation, it should not be an impediment to the post of Kruthyadhikari and the Kruthyadhikari (Director at Pirivena Level) This position should be filled in consultation with the Sect Headquarters and the devotees.

    - Provide suitable training on administration and management to the Kruthyadhikari theros.

- Establishment of a Parivenadhipathi (principal) Service similar to the Principal Service.

- Introduce a service minute for Parivenacharya (Teacher of Pirivena).

- Non-academic staff such as office assistants, chefs, drivers, and minor employees should be provided to Pirivenas.

- The current payment of annual grants for Pirivenas to be paid to the relevant institutes as block grant based on the type of Pirivena and development of a system of providing additional grants in addition to the standard annual grant using quality measurement indicators.

- Removal of 6% levy for teachers' pension scheme from the salaries of Pirivena teachers.

- Provisions of sanitary and infrastructure facilities for Pirivenas and Pirivena training institutes including building facilities, furniture and equipment, laboratory and computer laboratory facilities, electronic printing facilities, library facilities, aesthetic equipment for lay students, playgrounds and multipurpose equipment, technology providing facilities such as audio-visual units, subject development units.

- Introducing Curriculum revision for Pirivena education with new subjects and promoting essential subjects to achieve the objectives and goals of Pirivena education.

- Develop a practical curriculum that meets current, social, political, economic, and religious needs.

- Establishment, Classification, and Promotion of Pirivenas.

- Paying attention to providing basic needs and residential facilities, environment, triple Bodhi (sacred Bo tree, stupa, and shrine room), library and the like.

- Pirivena Training Institutes should be developed with teacher training facilities in relevant disciplines, traditional educational development, knowledge of ancient languages, and a good personality.

- Ensure effective liaison between the Department of Pirivena Education of the National Institute of Education.

- Establishment of a National College of Education of Pirivena for the development of privena teachers.

- Establishment of Buddhist Seela Matha Educational Institutions. Registration and distribution of Seelamatha Educational Institutions currently approved by the Government to be extended to the district and provincial levels.

- Development of Attitudes of Clergy and Lay Students in Pirivenas.

- Providing Bhikku and lay Attitude Training.

- Creating an Attractive Institutional Environment in Pirivenas.

- Conducting manual skills and practical training programs in basic grades.

- Implementation of extra-curricular activities.

- Evaluation and Assessment of Pirivena students.

- Regulating all examinations conducted by the government for Pirivena students.

- Strengthening the Term Examinations and Annual Evaluation Program.

- Inter-Pirivena Language and Literature Competition Evaluation Process

- Commencement of Pracheena classes in the primary pirivenas.

- Establishment of a Pirivena development fund nationally and at the Pirivena level.

- Establishment of a Pirivena education training, research and development resource centers at the provincial level.

- Obtaining the assistance of philanthropic personnel, embassies and expatriate monks both locally and abroad to promote Pirivena education.

INTRODUCING MINDFULNESS PRACTICE

General objectives

To establish mindfulness practice in the education sector in Sri Lanka.

Specific objectives

- To incorporate mindfulness education in a secular context to the education sector
- To make the mindfulness practice more relevant to educational achievements
- To introduce a new way of living by integrating mindfulness practice as a life skill.

Mindfulness and its benefits

Mindfulness is non-conceptual awareness which allows the recognition of one's own internal bodily reactions by increasing interoceptive awareness and, at the same time, promotes experiencing without judgment and the development of non-reactivity to internal experience (Creswell 2014).

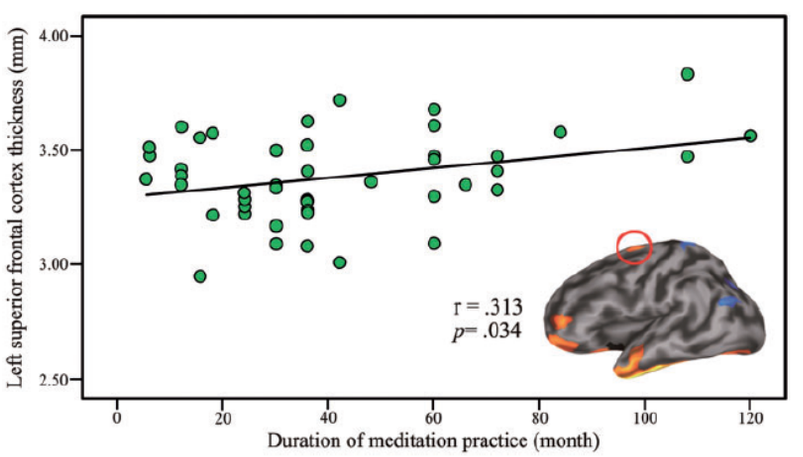
Mindfulness gives us more choices about how we respond effectively to our thoughts and emotions. It is not a form of hypnosis. The practice of mindfulness is not to achieve psychic abilities. It does not deal with chanting or harnessing invisible energies. Mindfulness is a form of mental training and in simple terms is the cultivation of awareness using concentration as a tool. It is a process of self-discovery, a participatory investigation in which one observes one's own experiences while participating in them, and as they occur (Gunarathana1991)

The basic model of mindfulness practice

The benefits of mindfulness practice are now well-known and supported by a large body of research: the practice of mindfulness changes the structure and functioning of the brain itself, increasing happiness and quality of life, and reducing stress, anxiety and depression.

Studies involving functional magnetic resonance imaging scans have revealed that the mindfulness practice induces functional and structural brain modifications, especially in areas involved in attention, executive functions and memory formation.

Effect of meditation on brain structure



With this scientific evidence, mindfulness education is incorporated into many fields across the world, including various governmental and non-governmental institutions. The United Kingdome has set up a Mindfulness All-Party Parliamentary Group to review this aspect, and it was recommended to incorporate mindfulness practice in the fields of health, education, workplace and criminal justice system. (UK All Parliamentary Group report). Furthermore, most of leading universities in the world offer facilities to practice and study mindfulness.

Currently, mindfulness teaching is offered as an optional programme under the Professional and Personal Development (PPD) module at the Faculty of Medical Sciences, the University of Sri Jayewardenpura since the establishment of its Mindfulness-Based Research and Practices Centre in 2018 (http://research.sjp.ac.lk/mindfulness/). Furthermore, Satipasala Foundation is one of the leading voluntary institutions providing necessary training on this perspective.

Proposed modalities

#	Proposed action	Expected outcome
1	Establish multidisciplinary co group	Smooth coordination.
2	Develop curricular on mindfulness practice and train the trainer programmes	Ensure constancy and accuracy of teaching
3	Develop online training modules	Increase accessibility to mindfulness practice
4	Establish mindful spaces/gardens	More opportunities for face to face teaching and group practice
5	Encourage mindfulness-based research programmes at educational institutions.	Facilitating evidence-based practice

Mindfulness in International Universities

Many universities around the world provide an opportunity to practice mindfulness.

USA

Minnesota, Massachusetts, Verginia, Wilson High School in Portland, Lesley, Thomas Jefferson, St. Thomas, California, Rochester, Xavier, Hartford, Harvard, Yale, UCLA

UK

Oxford, Exeter, Bangor, Bristol, Cambridge, Cardiff, Glasgow, Huddersfield, Kings Collage, Leeds, London School of Economics, Loughborough, Liverpool John Moores, Manchester, Postmouth, Queen Margaret, Sheffield, Southampton, Aberdeen, UCL, East Anglia, West of England, Stratchclyde, South Wales, Surrey, Warwicj, Northampton, Dundee.

Canada

University of Toronto, Queens university, Western University, University of Calgary, University of British Columbia.

2.20 Non formal Education

Non-formal Education is the prominent sector of the Sri Lankan Education System. NFE gives the participants learning opportunities that cannot be gained through formal education.

According to the National Education policy, NFE Consists of Education for all, Compulsory Education, Lifelong learning Education, Remedial Education, Education for the underprivileged, Education for development of quality of life, and programs to eradicate poverty.

The power of Education should be utilized to continuously improve people's quality of life through various learning opportunities.

Currently under the NFE Sector, the programs focus on, providing compulsory education for 5-16-year age participants, and income-generation as well as on the development of quality of life.

At present, the literacy program of 2,300 participants and the income-generating program provides education for 18,200 participants.

According to the special gazette notification No. 1963/30 and date 2016.04.20 issued by the Minister of Education enrollment of Non-school going children to schools is carried out by the relevant committees.

Issues

- Insufficiency of NFE project assistants to all educational divisions due to the number of officer's limit to 180.
- There is no plan to appoint NFE project officers to the education divisions.
- Insufficiency of allocations to carryout NFE programs.
- Less prominence to the NFE Sector from the relevant provincial and zonal officers.
- Less interference by the officers to provide opportunities for Lifelong learning.

Proposals

- Appoint non-formal project officers or in-service advisors for each educational division.
- Appoint an individual NFE officer for each educational zone.
- Allocate sufficient funds for NFE Sector.
- Provide opportunities for foreign and local training to the NFE officers.
- Conduct a landside survey of the identification of non-school going children.

- Create social discussion about the non-formal education sector.
- Need to reform the Legal Framework - Education Act, NIE Act, NCOE Act etc.

Attachments

- Summary of Previous Education Reforms (Dr. Jayantha Balasuriya is preparing a matrix on this)
- Summary of Educational Reforms in selected countries (This is being done in the PTF secretariat).

Addendum

Action Plan - This may be done on a matrix, including Actions, Responsibility, and Timeframe for short medium, and long terms.

ANNEXURE 1

PRESIDENTIAL TASK FORCE ON SRI LANKA'S EDUCATION AFFAIRS

1. D. M. A. R. B. Dissanayake - Secretary, Ministry of Higher Education, Technology and Innovation
2. N. H. M. Chithrananda - Secretary, Ministry of Education
3. D. M. S. Abeygunawardana - Secretary, Ministry of Skills Development, Employment and Labour Relations
4. Prof. Sampath Amarathunga - Chairman, University Grants Commission
5. Senior Professor Chandrika N. Wijeratne - Vice Chancellor, University of Colombo
6. Prof. U. B. Dissanayake - Vice Chancellor, University of Peradeniya
7. Prof. Sudantha Liyanage - Acting Vice Chancellor, University of Sri Jayewardenepura
8. Prof. Lakshman Seneviratne - Acting Vice Chancellor, University of Kelaniya
9. Prof. K. K. C. K. Perera - Vice Chancellor, University of Moratuwa
10. Prof. K. Kandasamy - Acting Vice Chancellor, University of Jaffna
11. Prof. T. S. D. Amarasena - Vice Chancellor, University of Ruhuna
12. Prof. S. A. Ariadurai - Vice Chancellor, Open University of Sri Lanka
13. Prof. F. C. Ragel - Vice Chancellor, Eastern University
14. Prof. M. M. Najim - Vice Chancellor, South Eastern University
15. Dr. B. A. Karunaratne - Vice Chancellor, Rajarata University
16. Prof. Sunil Shantha - Vice Chancellor, Sabaragamuwa University
17. Prof. E. M. P. Ekanayake - Vice Chancellor, Wayamba University
18. Dr. J. L. Ratnasekera - Acting Vice Chancellor, UvaWellassa University
19. Prof. W. M. Abeyrathne Bandara - Competent Authority, University of the Visual and Performing Arts
20. Rev. Marc Billimora - Warden, St. Thomas College, Mt. Lavinia
21. Rev. Sr. Alexandra Mendis - Principal, St. Bridget's Convent, Colombo 7
22. Mr. S. M. Keerthiratne - Principal, Ananda College, Colombo 10
23. Ms. Sandamali Aviruppola - Principal, VisakhaVidyalaya, Colombo 05
24. W. M. D. T. P. Wanasinghe - Principal Dharmaraja College, Kandy
25. F. Welegama - Principal, Rahula College, Matara
26. Dr. Harsha Alles - Chairman, Gateway Network of Colleges

ANNEXURE 2

CORE GROUP ON GENERAL EDUCATION

1. Mr Ariyaratne Hewage, Consultant (Policy), Former Secy/ MoE, Former Chair/Finance Commission - **Chair**
2. Snr Prof Chandrika N Wijeratne, VC/ UoC & Member/ PTF
3. Prof S A Ariadurai, VC/ OUSL & Member/ PTF
4. Dr J L Rathnasekara, Acting VC/ Uwa Wellassa University
5. Prof Harishchandra Abeygunawardena, Chairman/ NEC
6. Prof Janitha A Liyanage, Vice Chairperson/ UGC
7. Prof Deepthi Bandara, University of Peradeniya
8. Mr Sanath Pujitha/ Commissioner General of Examinations
9. Dr Sunil Jayantha Navaratne, DG/NIE
10. Dr Kapila Bandara, Dean, Faculty of Education, University of Colombo
11. Mr P N Ailapperuma, Director (Information Technology), Ministry of Education
12. Dr Vageesha Gunasekera, Snr Lecturer/OUSL - **Secretary**
13. Rev. Fr. Marc Bilimora, Principal/ St. Thomas' College, Mt Lavinia & Member/ PTF
14. Rev Sr Alexandra Mendis, Principal/ St. Bridget's Convent, Colombo 7 & Member/ PTF
15. Mr S M Keerthirathna, Principal/ Ananda College, Colombo 10 & Member/ PTF
16. Ms Sandamali Aviruppola, Principal/ Visakha College, Colombo 5 & Member/ PTF
17. Mr.W.M.T.D.P.Wanasinghe, Principal/ Dharmaraja College, Kandy & Member/ PTF
18. Mr. Thilak Waththuhewa, Principal, Nalanda College, Colombo
19. Mr F Welege, Principal/ Rahula College, Matara & Member/ PTF
20. Ms W D P K Samarasinghe, Principal, Devi Balika Vidyalaya
21. Dr Harsha Alles, Chairman/Gateway Group & Member/ PTF

ANNEXURE 3

FUNCTIONAL COMMITTEE ON GENERAL EDUCATION

1. Mr Ariyaratne Hewage, Consultant (Policy), Former Secy/MoE, Former Chair/Finance Commission - **Chair**
2. Mr S U Wijeratne, Former Add Sec, MoE
3. Dr (Mrs) Madura Wehella, Addl Sec, MoE - **Secretary**
4. Mr H U Premathilake, Addl Sec, MoE
5. Mr E Illangowan, Secretary to the Northern Provincial Education Ministry
6. Ms Padmini Ranaweera, Vice Chair/ NEC
7. Dr Jayantha Balasooriya, Director/Policy and Planning Branch, MoE
8. Mr Sepala Kuruppu Arachchi, PDE/Sabaragamuwa Province
9. Mr Piyadasa Rathnayaka, PDE/ Uva Province
10. Mr Indika De Zoysa, Former Education Sector Director, ICTA
11. Ms Gayathri Abeygunasekera, Deputy Commissioner General, DoE
12. Mr A L M Sarudeen, Additional PDE/Central Province
13. Ms Soma Ratnayake, D/Primary Edu, MoE
14. Ms Renuka Peiris, D/ School Health & Nutrition, MoE
15. Mr K R Pathmasiri, D/ Mathematics, NIE
16. Dr Asoka De Silva, Director/ Science, NIE
17. Dr Virajith Gamage, Director/ Teacher Education/ NIE
18. Ms Priyatha Nanayakkara, D/ Mathematics Education, MoE
19. Dr Vageesha Gunasekera, Snr Lecturer/OUSL
20. Dr A A J Fernando, Senior lecturer, University of Sri Jayewadenepura
21. Dr Sachie Panawala, Scientist/ Coordinating Secretariat for Sc, Tec. & Innovation
22. Mr P N Shutharson, Assistant Director of Education (English), Zonal Education Office, Kilinochchi
23. Mr HW K Amarasinghe, Former Assistant Director/Data Mtg, MoE
24. Ms Hasantha Kuruppu, Assistant Commissioner of Examinations, DOE
25. Ms Gayani Samarakoon, PTF Secretariat
26. Mr K D Wijayathilaka, PTF Secretariat
27. Ms M Kumari Edirisinghe, PTF Secretariat
28. Mr Samitha Jayaweera, PTF Secretariat
29. Ms E D I Jayawardana, PTF Secretariat

REPORT OF THE
CORE GROUP ON HIGHER EDUCATION FOR REFORMING THE HIGHER EDUCATION SECTOR OF SRI LANKA

June 2020

Editorial Team

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Executive Summary

Sri Lanka considers education as a wealth and the country fares well ahead of many countries of the same league in Primary and Secondary education.

However, according to key indicators such as gross enrolment ratio, employability, composition of graduates for a knowledge economy, quality and relevance, age at which graduates pass out, university contribution in research and innovation, Sri Lanka is far behind its contemporaries needing significant reforms. The situation was compounded with the impact of Covid–19 significantly affecting university teaching and learning, conduct of examinations, research and development and university new admissions needing further urgent actions to mitigate such impact.

This report includes a comprehensive analysis of the present situation, review of past reports, policy recommendations, best practices of several selected countries, critical issues and constraints, and provides recommendations not only to mitigate the impact of Covid–19 pandemic on higher education but also to effect essential reforms to modernise the higher education sector in line with the new policy imperatives of H.E. the President and the Government of Sri Lanka, Ministry of Higher Education and University Grants Commission.

The key findings of the study and recommendations are provided below.

Impact of Covid–19 and Mitigation Measures at Universities and HEIs

During the closer of the university due to Covid-19, almost all universities swiftly initiated action to provide as much support as possible through online/distance mode, so that the delays could be minimized albeit with several institutional, IT infrastructure and academic challenges. It is heartening to note that most students, irrespective of the type of academic programme, language of delivery, including the students of the Faculties of Arts and Humanities, have shown great enthusiasm and interest to learn through online and the participation of students at online/ distance delivery has been beyond expectation.

During the affected period, an increased attention was also given to use of online/distance mode of formative assessment and conduct oral examinations despite no end of semester examinations have been conducted by any university due to several logistical and procedural concerns.

In order to overcome some of the critical challenges the following recommendations are given.

- Ensure all universities and HEIs have well-established LMS, sufficient IT infrastructure for 24/365 online service, e-Learning Centre in each faculty and qualified technical staff.
- Ensure formal policies in HEIs to make the LMS as a part of education process and provide required training to staff to set up their online courses in the LMS with necessary curricula revisions to suit blended/online delivery as well as online course material development.
- Establish a policy to recognize all efforts of online use as designing of academic courses for online/distance mode is a creative process which depends on innovative practices of teachers to integrate IT in the delivery of courses.
- The success of blended/online learning depends on the access to learning materials by the students. Hence, they must be able to use their personal computing devices such as laptops/tabs/smart phones to access/interact with LMS from outside. All students who will join HEIs should be facilitated to acquire a laptop computer and a smart mobile device (tab/phone) according to his preference. Since students have different financial backgrounds, it is important to establish an educational loan facility which will facilitate

students to buy these personal devices for academic activities. The cost of data access could be minimized with special Broadband Access packages.

- Online collaborative working environment with video conferencing facility is crucial for the blended/online interaction among students and teachers. For example, Google Classroom, Meet, Microsoft Team and other tools, and conferencing through Zoom. HEIs should support students and staff to use these facilities for academic activities.
- The LMS could be extended to Virtual Learning Environment (VLEs) of faculties by integrating e-Library facility and other student services for efficient management of academic activities in the Universities.
- The Sri Lanka Qualification Framework (SLQF) should incorporate policy guidelines for e-learning, e-teaching, and e-assessments. This way, it will facilitate a uniform standard while addressing the quality assurance issues due to expansion of education using blended/online modes of delivery.
- Teachers must be encouraged to use the facilities in LMS to implement the formative/summative assessments in all possible courses with necessary revision of by-laws, with an established form of validation guidelines, using advanced technologies and learning from best international practices.
- It is important to take actions to avoid malpractices that could happen during online assessment/exam. HEIs should acquire important software tools/packages for plagiarism checking and Lockdown browser to control when students undertake online assessment.

Expeditious Enrolment of Students to Universities and HEIs

After sitting the GCE (A/L) examination, a student must wait for more than a year to enter a state university due to the current system of student selection and various other administrative and academic reasons. Despite the UGC having a well-developed online application processing system, the selection process usually takes about six months from releasing of results. This situation is further aggravated due to Covid-19 impact. The main reasons for this delay includes: (a) delay in submission of applications by prospective students due to closure of schools as the school candidates need to obtain an endorsement of school principals before submitting their applications; (b) issue on the methodology of selecting due to two batches of GCE (A/L) students consequent to two syllabuses and agreement of resulting numbers; (c) the need to wait until re-correction results are released; (d) resource limitations at the Admissions Department of the UGC due to sudden influx of over 100,000 applications to process; and (e) a further delay when students are actually enrolled to universities and commence academic activities due to issues specific to various universities including delays due to Covid-19 pandemic.

The enrolment of students for the non-state sector is very different. The usual pattern is to enrol students twice a year: first, soon after the GCE (A/L) results are released, and the second, after selection for state universities are completed. The enrolment criteria of the non-state HEIs does not depend on GCE (A/L) programme and it is specific to the degree programme and their affiliation to the foreign university. However, the most critical sector affected due to Covid-19 pandemic situation, is the student groups who enrol to non-state HEIs through 'Interest Free Student Loan Scheme' (IFSLS) and 'My Future Loan Scheme' introduced by the Government as these students are selected after completion of enrolment of students to the public universities. Any delay in recruiting students to public universities by the UGC, would adversely affect the enrolment of students to non-state HEIs under this category, which amounts to approximately 5,000 students.

The issues related to these delays have been studied and the recommendations to reduce them are as follows.

- The UGC has to wait until GCE (A/L) re-correction results are released to process university selection as the effect of change of results has a significant impact on the list of students selected due to the present university selection criteria based on 40% on merit and 55% on district quota for the majority of the courses. Thus, there is a great need to expedite the issue of re-correction results to speedily commence student selection to universities.
- There is also a need to get results of candidates verified. The UGC has now taken steps to create an online link with the Department of Examinations to get the GCE (O/L) and GCE (A/L) results immediately verified, without resorting to the current time-consuming paper-based communication.
- The current practice of manual checking and vetting applications for university selection takes long time. The UGC is currently in the process of getting a new system for checking and vetting of applications developed, which automates many manual steps and more advanced than the existing system leading to speedy processing of applications.
- Currently, the UGC is responsible for selecting students under the normal intake and filling of vacancies. Filling vacancies due to non-registration of students takes 8 to 10 rounds every year for some courses consuming nearly 3 to 4 months after the first selection before sending the final list to the universities. As the number of new registrants after the first two rounds is small, it is proposed to handover filling of vacancies to universities on an all island merit basis. For this purpose, existing admissions policy needs to be changed.
- With these constraints the UGC's Admission Department carries out an enormous workload working 7 days a week and into late hours during the student selection period. At least as a temporary measure until these systemic and process constraints are sorted out, allocation of more staff and space is required to reduce delays in student selection to universities.
- In order to productively use this waiting time, online/IT technologies could be successfully used to impart knowledge and develop English language skills needed to effectively follow university courses and to develop employable skills and competencies. To this end, a Pre-University Online English language programme will be organized by the UGC for the new university entrants from 2020. In the future, this programme will be offered through the proposed Virtual University, facilitating all those who will be eligible to register higher education based on their Advanced Level results to follow the course.
- Furthermore, online/IT facilities could be used to deliver at least 30% of content in most courses, with going up to 80% in other courses. Therefore, time required to deliver a course could be reduced, as well as physical resources could be minimized. HEIs could use this formula to productively utilize the waiting time to start by offering online/distance courses to new students who could follow several online courses before they start the F2F sessions.

Higher Education Reforms beyond Covid–19

With regard to the reforms beyond Covid-19, and the persisting quest for need to expand opportunities for tertiary education, it is noted that ground-breaking changes need to be infused to transform the tertiary education sector in Sri Lanka to a more globally proven tri-partite system consisting of three key types of HEIs, namely, (a) State and Non-state Undergraduate HEIs (b) Undergraduate and Postgraduate Research Universities, and (c) Non-state Vocational and Professional Institutions.

This transformation must be done with a view to: improving access to tertiary education; providing more flexibility and mobility within and among the three tiers/sub-sectors; offering well delineated diverse education, training, and career paths; enhancing standards, quality, and

relevance of the types of training offered; promoting postgraduate education, and research, innovation, and commercialization; and promoting income generation and disbursement. Hence, the following goals and strategies are proposed to ensure the fulfilment of the above-mentioned objectives.

Accordingly, this report suggests a series of recommendations for reforming and modernising the higher education sector in Sri Lanka under specific goals. Some of the important recommendations under each of the goals are presented here.

Restructure the Higher Education System with appropriate Legislation

Higher education system in Sri Lanka needs urgent restructuring with the existing Universities Act No. 16 of 1978, enacted four decades ago, when there were fewer than six universities being reconstituted. The present university system is characterized by both strong institutional autonomy and tight central control thus resulting in neither accountability nor performance. Therefore, the existing Universities Act and accompanied regulations need to be amended appropriately:

- to make the UGC an effective apex, regulatory and facilitatory arm of the higher education sector and act as a catalyst;
- to grant greater autonomy to established universities to facilitate mission differentiation; and
- to expand university intake by establishing university colleges/campuses affiliated to established universities, City Universities, and a new university for STEM.

Promote Efficiency in HEIs by Reforming Governance

Good governance is important in higher education, and coupled with accountability and transparency, governance as an overarching framework, allows a university to be sustainable in the long-term. In this respect, it is necessary to reform governance of higher education sector to promote administrative and financial efficiency by:

- restructuring the MoHE to equip it to undertake all administrative, regulatory functions more effectively and efficiently;
- forming a new regulatory body, called Non-State Higher Education Council/Authority (NSHEC/A) to govern the non-state HEIs;
- adopting appropriate reforms for allocating funds to make state universities results oriented and to have improved performance and accountability;
- ensuring all universities have institutional mechanisms to adopt strategic management approach; and
- eliminating all non-core ancillary services in universities, which do not have any comparative advantage and instead use PPPs to provide such services.

Harness Evolving Technological Potential to Provide Rewarding Teaching and Learning Experience through Online Learning

The modernization of the higher education sector in Sri Lanka is an important requirement to address several issues that have become bottleneck for the development of the country. Increasing demand for higher education cannot be addressed by building or expanding new brick and mortar universities and invariably, distance education and online learning must play a crucial role in providing access to education for all who want to learn. For online education to be effective three essential components must be in place. They are, Technical Requirements,

Learning Resources and Learner Support. Following are key recommendations to strengthen and enhance online learning opportunities in Sri Lanka.

- Expand the scope and capacity of LEARN to provide all IT infrastructure needs to offer courses online and plan and implement interventions to provide access for students to a device to connect to the LMS, and adequate Internet connection.
- Launch a national project to establish one-place national repository of multiple mode learning resources by developing a national Open Educational Resource (OER) policy.
- Initiate discussions with international organizations to offer courses developed by world-class universities to Sri Lankan students and to offer courses developed by Sri Lankan academics to global audience.
- Expand the facilities for web conferencing systems to reach students in remote locations and encourage the use of social networking tools to be in contact and engage with students.

Enhance the Relevance of Higher Education

Relevance is an important requirement in the education sector. In a changing world, what was considered relevant education yesterday may not be relevant to the requirements of individuals, industry, and the society today. Relevance in higher education can be implemented with a framework of processes that centre on planning, design, implementation, monitoring, review, evaluation, and improvement. Considering the importance, following are some of the recommendations to enhance the relevance of higher education in the Sri Lankan context.

- Integrate learner-centred teaching and learning approaches based on modern ICT technologies and learning assessment methods to promote outcome-based education.
- Establish a National Institute of Higher Education to promote the adoption of modern educational technologies and to undertake continuous professional development of academic and managerial staff of universities.
- Introduce scholarship scheme for academics to obtain overseas postgraduate education and exposure to modern education delivery and expand the academic staff cadre in priority disciplines to overcome staff shortages.
- Implement strategies to ensure curriculum reforms and programme delivery and assessment to develop knowledge, skills and competencies required by the employers and the industry.
- Enhance the quality and relevance of external degree programmes through quality assurance and regulatory interventions.

Expand the Services of the Open University of Sri Lanka

The Open University of Sri Lanka (OUSL) has the ideal model, system, and structure to expand and accommodate large number of students. The network of regional and study centres of the OUSL helps to successfully reach students scattered in different localities of the country. In the recent years, the OUSL has been implementing many initiatives driven by technology, to transform it into a digitalized university. It is proposed to implement the following strategies to increase the student population of the OUSL to 100,000 in the next five years.

- Develop the Regional and Study Centres of the OUSL with necessary infra-structure and human resources to handle existing and new programmes and large number of students.
- Offer new inter-disciplinary and inter-faculty programmes to make them employment oriented and suitable for students with diversified qualifications and experiences.

- Introduce institutional reforms enabling the centres to administer academic programmes independently while being accountable to the central campus.

Enhance the Competencies and Skills of non-STEM Graduates to Support Country's National Development and Growth

Developing graduates with a range of competencies and skills needed to navigate an ever-shifting workforce is an important requirement for study programmes of HEIs. In this respect, following interventions are recommended to increase the competencies and skills of non-STEM graduates to face the challenges of the rapidly changing world.

- Provide undergraduates of non-STEM programmes an opportunity to earn a qualification in Information Technology offered by the UGC.
- Strengthen the IT infrastructure of all non-STEM Faculties enabling students to experience state of the art facilities.
- Establish IT Service Units/Departments in all non-STEM Faculties.

Establish a Virtual University to increase Access for Higher Education

Focusing on the positive aspects arising out of Covid-19 pandemic, an opportunity to implement "Virtual" approach to education, which ultimately enables quantum increments of student intake as opposed to incremental increases that will not address the supply demand gap, it is proposed to establish a virtual university under the UGC with involvement of existing universities in a partnership model. Some of the distinctive features of this university are as follows:

- Not to have the traditional model of departments and faculties, but hire minimal permanent academic staff, drawing resources from partner institutes in visiting capacity.
- Establish Board of Studies with academics from partner institutes and offer course modules developed by Course Teams and award credit certificates for each module.
- Allow students to freely offer course modules of their choice, with no pre-requisites and facilitate earning of credits, on the principle of flexible entry and exits.
- Allow credit transfers and exemptions between different programmes offered by other recognized course providers within and outside the country.
- Pool and share the best human resources both within and overseas and use optimally the existing infrastructure of other institutes.

Expand the Non-state Sector of Higher Education

In the last few years, the non-state higher education sector in Sri Lanka has come a long way in providing many opportunities for Sri Lankan students to pursue higher education in Sri Lanka itself. However, as this sector does not have proper legislative backup and monitoring systems its growth and credibility has been questioned at various quarters. In this respect, one of the main areas of focus should be expanding the non-state higher education sector with proper legislative support with monitoring and accountability structure. Further, opportunities should be created for students who have been studying overseas and returned to continue their higher education in Sri Lanka within a safer environment.

Promote Research and Development, Innovation and Technology Transfer

The post-industrial knowledge economy of today clearly displays the close correlation among economic growth, innovation, and indigenous research capacity. University-based research has

been the most effective driver of such economically relevant innovation. Most high-ranking Asian universities have transformed themselves from teaching universities to research universities in keeping with this global trend. Sri Lanka needs a paradigm shift to make research and innovation core components of undergraduate and postgraduate education. In this respect some of the important strategies recommended to promote R&D, innovation, and technology transfer within Sri Lankan HEIs are given below.

- Devise flexible mechanism to respond to novel ideas with solid potential and new funding opportunities for research, and formulate procedures to attract global talent, to build a highly qualified and skilled talent pool in the country.
- Introduce higher educational reforms aimed at establishing the value chain of integrated, interdisciplinary, and multidisciplinary approaches that drive academic and research excellence, which can translate into innovative products and services in Sri Lanka.
- Promote innovation collaborations between universities and industry as a mutually beneficial and profitable exercise for all stakeholders and include creation of intellectual property and employment opportunities as well as engage in capacity-building.
- Create research and innovation centres within universities with a global outlook, conforming to the highest standards and carrying out cutting-edge research with a global purview, so that these institutions and their research yield remain globally competitive.
- Establish quality research centres of excellence and raise funds for research through collaboration and develop capacity to compete for international grants and enhance research funding through endowments.
- Formulate legislation arrangements to address the existing gaps and to remove barriers to enable R&D leading to intellectual property generation, innovation, and commercialization

Ensure Quality Assurance in Higher Education

The concept of quality assurance was introduced to Sri Lankan state university system about two decades ago. The Quality Assurance and Accreditation Council (QAAC) was established under the UGC with the focus on creating awareness of the benefits of quality assurance and familiarity with the concept, in addition to verifying compliance with minimum standards in quality. Since then much has been achieved. The 'Quality Assurance Handbook for Sri Lankan Universities' and key reference documents such as Subject Benchmark Statements, Codes of Practice and the Sri Lanka Qualifications Framework have been published and QA programme reviews and institutional reviews are now a regular feature in all universities. However, further enhancement of QA work must be carried out not only to cover state universities but also the entire sector of higher education providers. Some of the key recommendations for this purpose include the following.

- Establishment of an independent QA entity with necessary legal authority to ensure quality and standards of all academic programmes and processes in both state and non-state HEIs.
- Create full-time academic positions in the permanent cadre in the universities dedicated to QA activities.
- Introduce a synchronized calendar for the state university system which will avoid many delays and facilitate inter-department, inter-faculty, inter-university, and international collaborative degree programmes.
- Devise a funding mechanism to ensure a regular 5-year cycle of external reviews and use External Quality Assurance (EQA) outcomes to informed funding decisions.
- Establish and promote collaborative partnerships between local universities and international universities of higher ranking.

- Improve the quality of education programmes by seeking accreditation from international agencies and through agreements to collaborate on quality assurance with foreign agencies.
- Digitalize the university information systems and encourage and support state universities to develop and run management information systems that serve the needs of the university and QA and accreditation entities.

1

Introduction

1.1. Background

Sri Lanka is a country that considers education as a wealth and offers facilities for education at various levels. Based on available statistics, it is apparent that the country fares well ahead of many countries of the same league, when it comes to Primary and Secondary levels. However, same cannot be said about tertiary education, where the indicators suggest that Sri Lanka is far behind its contemporaries. Based on a World Bank Report (Dundar et al, 2017), in Sri Lanka, only 6% of young people (between the age of 18 and 24 years) are enrolled in a state university, while another 5% are enrolled in other state higher educational institutions. Further, 6% of the same age group are enrolled in non-state higher educational institutes and about 3% are enrolled in external degree programmes. In total, the Gross Enrolment Ratio (GER) in tertiary education in Sri Lanka is only about 20%, being the lowest among all middle-income countries and below the average value for South Asia, which is 24%. Further, like most developing economies, Sri Lanka faces significant brain drain. According to World Bank statistics (World Bank, 2011), Sri Lanka has one of the highest rates of brain drain among the South Asian countries with 27.5% of those who received a tertiary education have already migrated with an average annual migration level of 6,000 professionals. Therefore, as a country Sri Lanka does not have a choice but to further expand the tertiary education sector. To this effect, though, over the years, several higher education reform programmes have been implemented by the government, further strategic interventions are required to effectively respond to the challenges of knowledge-driven economic growth and to meet the development targets. A more detailed overview of the Sri Lankan higher education sector is given in Appendix 1.

One of the vision statements of the incumbent President of the country, emphasized the need to introduce a reform programme in the education sector that will enable all qualified students to continue higher education so as to be equipped with required knowledge and skills for the development of the country. As one of the initiatives to achieve this vision, His Excellency the President appointed a Presidential Task Force (PTF) on Sri Lanka's Education Affairs, through a gazette notification on 31st March 2020. The PTF which consists of experts in the field of education and higher education decided to appoint three (03) Core Groups to propose suitable recommendations, to address the issues of different education sectors (General Education, Higher Education and Vocational Education), by considering the differences and variation of students, issues, institutions, and available resources. In this context, the Higher Education Core Group has been set up to recommend interventions to modernize the higher education sector in Sri Lanka, and to ensure continuity of education without any setbacks whatsoever, in the context of the Covid-19 pandemic situation. The list of members of the Higher Education Core Group is given in Appendix 2.

1.2. Scope of the Core-group

The impact of Covid–19 on the higher education sector including university teaching, learning, examinations, research and development and university new admissions were assessed, and actions already taken and being implemented to mitigate the impact are described. Current issues are identified, further strategies are formulated, and further actions are proposed to conduct student education activities without interruption under the distance education concept during this Covid-19 pandemic period.

The Core Group further proposes necessary mechanisms to be implemented for proper operation of examination activities and curriculum of students after clearing the backlog of work that has occurred due to recent interruptions to higher education activities within its capacity and facilitate necessary action by other stakeholders to ensure swift action to minimize the Covid–19 impact.

Impact on the enrolment of new students to universities was also reviewed and actions are formulated to expedite new enrolments to expand higher education opportunities by extending distance learning methodologies to new students.

The Core-group has also looked at the development of higher education beyond Covid–19 pandemic as an essential component of this report and has elucidated the initiatives already taken, and policies, strategies and actions already identified.

1.3. Task of the Committee

Followings are the major tasks of the Core Group for Higher Education given in the Terms of Reference.

- Review previous reports and documents on tertiary education reforms/ modernization approaches relevant to the higher education sector.
- Review relevant documents on higher educational policies, practices and reforms in selected countries and adopt appropriately to the system in Sri Lanka.
- Review the experience of other countries on distance learning and e- learning as techniques of learning and adopt suitable techniques appropriately.
- Identify key components to be included in the reforming process.
- Develop communication strategy to exchange views among the Sri Lankan and foreign experts/academia at national and International level.
- Suggest strategies for implementation of distance learning mechanisms effectively, including resources requirement, expected results and monitoring mechanism.
- Develop communication strategy to exchange views among the educators at national and university level.
- Prepare draft documents including the new ideas on selected components for circulation among members.
- Organize regular meetings with the Core Group for Higher Education and discuss the proposed reform components and circulate among the Task Force members for their comments.
- Organize meetings with Functional Group on General Education and Functional Group on Vocational Education to ensure that all proposals are appropriate and integrated to cover all levels of education.
- Prepare a consolidated report by 05 June 2020 and submit the same with for Core Group for recommendation.

- Any other matters deemed suitable for the development of reform proposals.
- Finalize the consolidated report for Higher Education by 12 June 2020 for the presentation to H.E. the President.

1.4. Methodology Adopted

Improving the quality and standards of undergraduate education through reforms has been a key goal in the proposed reforms of the higher education sector. The government, the MoHE and the UGC have been devising new policy options, particularly aiming at modernizing undergraduate programmes so that they can respond adequately to the changing nature of higher education globally and have initiated number of reform exercises in the university sector.

In line with the Terms of Reference (ToR) of the Higher Education core group, the officials of the MoHE, the UGC and the Vice-Chancellors of the Universities had two rounds of discussions with HE the President, and various matters pertaining to reforming the entire higher education sector in Sri Lanka were discussed.

In addition, the Committee reviewed the secondary data published during the last two decades in Sri Lanka and in the world. By doing so, it attempted to study and review:

1. the historical developments in higher education reforms in Sri Lanka; and
2. the issues faced and strategies adopted to modernize and improve the higher education sector in the country and other parts of the world.

The committee's documentary review can be categorised as follows.

1. Previous reports and documents on tertiary education reforms/modernization approaches relevant to the higher education sector in Sri Lanka.
2. Policy and other related documents such as statistical reports published in journals, books, articles, working papers and newspapers.
3. Documents published by the national government and non-governmental agencies such as the National Education Commission, Central Bank of Sri Lanka, Ministry of Higher Education, University Grants Commission, Asian Development Bank, and the World Bank.
4. Relevant documents on higher educational policies, practices, and reforms from selected countries, such as Australia, India, Indonesia, China, Malaysia, and Vietnam.

The information obtained from the review was classified in terms of the sources and content of data. This was done apart from gathering information at the level of committee, sub-committees, and stakeholders level communication.

In the analysis, the gathered information was presented thematically under five main headings, namely, introduction, review of previous reports and country experiences, analysis of current situation, proposals and recommendations to mitigate the Impact, and higher education beyond Covid – 19 and each heading is covered by specific sub-headings.

To formulate this report five Core group, zoom meetings were conducted and several sub-committees were appointed to address specific tasks such as data collection, analysis, and report writing. The preliminary draft report was circulated among all the core group members of the higher education sector to obtain comments and suggestions. Their responses were incorporated into the final draft. The final draft was then presented to the members of the PTF for their comments. Final report was then prepared incorporating all the valuable comments

and suggestions made by the members of the Presidential Task Force on Educational Affairs of Sri Lanka. The report writing sub-committee met over several occasions to finalize the report.

2

Review of Previous Reports and Country Experiences

According to previous reports, many attempts have been made in the past in proposing policies, strategies and actions to address wide ranging issues in higher education sector in Sri Lanka and several initiatives have already been taken to implement some of these proposals. Collectively, these reports and publications provide a comprehensive analysis of the present status, a new direction for higher education to meet the needs of the 21st century, policies and strategies to address chronic and critical issues in higher education over the years, possible ways of expanding access to higher education and many more. In addition to these local reports, there are several publications describing various models of higher education, country experiences, best practices that Sri Lanka can learn from not only in mitigating the impact of Covid–19 pandemic but also looking into rapid transformation of higher education globally. The key aspects from all these reports, including experiences from other countries, are briefly described in this section.

2.1. Review of Previous Reports

In order to know the historical perspective and to maintain continuity, several past reports and policy documents were studied and reviewed. A synopsis from some of these reports are presented below.

Sri Lanka Education Sector Assessment: Achievements, Challenges, and Policy Options (Dundar et. al, 2017)

This publication by the World Bank provides a comprehensive analysis of the entire education sector in Sri Lanka from Early Childhood Development to higher education comparing Sri Lanka with other regional countries and the world. Looking into the higher education sector, it provides a very bleak picture as Sri Lanka's participation in the higher education is significantly low compared to developing countries with similar status of development. The challenges faced by the higher education sector with regard to access to higher education, quality of higher education programmes, research performance, relevance of graduates, financing and governance are comprehensively addressed indicating that Sri Lanka is far behind in the provision of higher education to meet the country's development challenges. Important policy options are also provided to address this situation from multiple angles considering the poor situation in Sri Lanka drawing from best practices from other countries.

The Towers of Learning Performance, Peril and Promise of Higher Education in Sri Lanka (Aturupane et al., 2009)

This document published by the World Bank provides yet another comprehensive analysis of higher education performance in Sri Lanka comparing with similar developing countries and the world at that time and provides policy guidelines for meeting challenges and significantly improve the situation in Sri Lanka. Despite some improvements in the situation in-terms of employability of graduates, gradual improvement of access to higher education, initiatives of quality assurance in state universities, introduction of Sri Lanka Qualification Framework

(SLQF), many of the issues highlighted in this report are repeating in the 2017 study (Dundar et al, 2017).

Highlighting the state of quality of graduates, specially graduates of Arts and Humanities, Management and external degree holders, the report emphasizes that producing graduates with knowledge and skills needed in the industry is more important than increasing the access to higher education which too is a critical issue. Both these reports facilitated by the World Bank, highlight that the investment in higher education in Sri Lanka is considerably low compared to other South Asian countries and those of similar development stage.

National Policy Proposals on Higher Education (NEC, 2019)

The National Education Commission (NEC) has been statutorily entrusted with the formulation of Policy Proposals on all aspects of education in Sri Lanka advising HE the President to initiate necessary action. Its latest report has been produced considering the National Development Strategy of the Government and the Sustainable Development Goals. This publication provides comprehensive analysis of the present status of higher education in Sri Lanka, proposed policies and strategies for implementation developed with wide consultation of the relevant stakeholders.

These policy guidelines and strategies cover many aspects of higher education including: Governance, Finance, Resource Management; Access to Higher Education, Student Admissions and Identification of Demand for New Subjects/Disciplines; Career Guidance and Counselling; Student Welfare and Discipline; Post-Graduate Education and Research; Quality Assurance and Accreditation of State and Non-State Higher Education Institutions; Academic and Non-Academic Staff Development; and Non-State Higher Education Institutions and Public-Private Partnership.

University Governance, Autonomy and Accountability: Directions for Change (UOC, 2015)

This report of a workshop organized by the University of Colombo, provides a range of recommendations for various aspects of Governance, Autonomy, and Accountability under several themes. These include: Academic Freedom, Autonomy and Accountability; Accountability and Responsibility in University-Government Relations (University Autonomy in Practice); Autonomy, Accountability and Responsibility in Governance within Universities, and among Academics and Administrators; Appointment Processes of Vice-Chancellors and Council Members; Grievance-Handling Mechanisms at all Levels; Rewards, Incentives and Best Practices within the University System; and Issues of Governance Specific to Relatively New Universities in the Periphery. This is an important document to be considered in addressing governance, autonomy, and accountability in the local state university system.

Sri Lanka STEM Education Strategy (MoE, 2019)

Given the global emphasis on Science, Technology, Engineering and Mathematics (STEM) education and its impact on the innovation, knowledge creation and economic development of a nation, Sri Lanka has already identified the need to enhance STEM education portfolio at every level of education. The strategy document prepared in consultation of all education stakeholders, provides an overview of various efforts and strategies of other competitive nations and a futuristic plan with recommendations developed by the relevant implementing institutions to transform Sri Lanka's education to significantly enhance the STEM emphasis at every level of education covering, primary, secondary and senior secondary levels. With the implementation of these strategies, a significant expansion of STEM education will take place in

higher education too and the universities should take proactive actions to promote, facilitate and accommodate such STEM education expansion.

Guidelines on Distance Education During Covid–19 (COL, 2020)

This document, published by the Commonwealth of Learning (COL) which is an inter-governmental organization mandated to promote the use of Distance Education to improve access to quality education and training, includes comprehensive set of guidelines on how to conduct distance education during Covid–19. This publication was very timely as distance and online learning have become the only means for educational institutions to keep the doors of learning open. The guidelines aimed at governments, educational institutions, regulatory agencies, parents, and students to effectively deal with this crisis with least disruption.

COL has also initiated several joint activities aimed at building the capacity of staff in distance and online provision and harnessing the potential of Open Educational Resources (OER) to offer quality content. COL's extensive knowledge and expertise in the field of distance and technology-enabled learning underpin these Guidelines and provide a practical roadmap for both policy makers and practitioners. These guidelines can be readily put into practice in Sri Lanka too not only in the institutions practicing open and distance education but also in all conventional universities with speedy action to address some barriers in effectively utilizing these technology-enabled tools.

2.2. Experiences from Other Countries

Case studies from many countries including Australia, India, Indonesia, and several European countries were studied and some of the major reforms done recently are listed here. In Appendix 3, a more detailed report on the experiences of Online/Distance Education from selected countries is given.

- Many countries emphasize economic development through a knowledge society. To achieve this, actions taken include, diversifying and emphasising on quality in education, developing a sustainable higher educational system, income support to students, building stronger connections between school education, higher education, vocational education, and training and promoting STEM education at all levels.
- Expanding higher education by enrolling students in non-traditional studies.
- The state being and continuing to be the primary funding source for Higher Educational Institutions (HEIs).
- Resorting to a funding mechanism to HEIs based on student demand with under enrolled universities given time to adjust to the new arrangements and encouraged to diversify to attract more students.
- Assisting with additional cost of providing quality higher education in regional HEIs, thus helping the local community and the HEIs to manage higher cost to location, size, and targets. Once the HEIs have built up the necessary infrastructure, performance-based funding to Universities is practiced.
- Funding for reforms in Quality Assurance, upgrading of Faculty, teaching-learning consultations with sector and stakeholders, research and development, income support for students from low socio-economic background (assessing students as dependants by assessing the Parental Income Test), Merit based scholarships etc.
- Using comprehensive career counselling programmes for students.

- Integrating students from backward section of society into the mainstream.
- Initiating training programmes on higher education management, quality assurance, good governance, and autonomy for administrators at different levels, support staff and academics.
- Introducing of Tenure Track System (TTS), where two different tracks of Faculty positions, firstly research track, which involves more research and less teaching load and secondly teaching track, with higher teaching and administrative loads with Faculty evaluation being undertaken based on their own strengths.
- Introducing different promotional criteria for Faculty from disciplines with broad spectrum of fields.
- Asserting the importance of inventing in teaching at every stage; creativity, willingness and innovation and commitment are expected to be addressed at every level.
- Revising curriculum frequently and enhancing research, technical, professional, and vocational education, and training.
- Changing content delivery from passive mode to effective delivery, with the aim of achieving the goal of achieving Higher Order of Thinking Skills (HOTs) and Communication Skills, as well as the ability to be a good team player.
- Introducing student centred education and assessments, based on developing graduate attributes and the attainment of competencies rather than academic achievement.
- Introducing sub-bachelor programmes (Associate Degrees) and expanding support for work experience in Industry Units.
- Introducing varied choices in the curriculum with career advancement courses in the form of Massive Open Online Courses (MOOCs).
- Improving Internet connectivity and ensuring every student has at least one IT device.
- Launching National Digital Libraries and Repositories.
- Increasing the performance in terms of world-class research excellence through Universities of Applied Sciences that make contributions to the needs of the knowledge society.
- Promoting research by increasing links with business and industry and promoting knowledge transfer processes. Setting targets to increase the general input to research with substantial part coming from the industry.
- Integrating talent pool of international scientists and entrepreneurs with the local HEIs to elevate the local scientific and technological capacity to global excellence.

3

Analysis of the Present Situation

3.1. Impact on Curriculum/Course Delivery due to Covid – 19 Pandemic

Almost the entire world was forced to restrict populations to Work from Home (WFH) with no exception to the Higher Education Institutions (HEIs) to contain the spread of Covid-19 and protect citizens of the respective countries instantaneously. As a result, academic activities at all universities have been affected. As education holds the key to development of all spheres of activities, all universities and HEIs have attempted to commence activities online through the respective Learning Management Systems (LMS), which have been developed in the individual Universities. As a result, LMS platforms such as Moodle together with real time online lectures through various platforms have become popular.

Blended learning is not a new concept in the state university system in Sri Lanka, as over the last decade or more; it has been practiced by many universities through LMS platforms to address certain issues in the face-to-face (F2F) environment, as well as to improve the quality of education. Hence, staff and students of many universities are using online learning as a part of blended learning albeit of strong heterogeneous practices among the universities as well as within faculties of universities in the use of IT. The impact of course delivery of the universities and HEIs, positive trends, actions already taken to mitigate the impact and implementation issues can be highlighted as follows.

- During the closure of the universities due to Covid-19 pandemic, almost all universities swiftly initiated action to provide as much support as possible through online/distance mode, so that the time required to complete the remaining academic activities could be reduced once the universities reopen for normal activities without much extension of the semesters. However, these efforts significantly varied among universities, faculties, academic programmes, and subjects due to various reasons.
- According to a survey conducted by LEARN among 28 HEIs, all universities except two have used LMS to impart learning through online modes (see Appendix 4 for details). Of the courses offered by these universities, about 34% of HEIs have 80% or more courses in the LMS, 40% of HEIs have 40-60% of courses online on LMS servers and the balance (26%) have less than 40% courses online.
- Many teachers despite restricted infrastructure facilities have taken the challenge to deliver courses online/distance mode and even face-to-face (F2F) teaching/learning activities using online technologies. There are instances even in conventional universities where the entire planned teaching workload was delivered in this mode except the essential practical work.
- However, some teachers, even with the availability of adequate facilities, have not integrated online teaching/learning practices due to various other reasons, including the belief that physical F2F is more effective than the online delivery of courses.
- Many teachers have difficulties to start online teaching since they had not integrated IT-based teaching/learning activities into their curriculum and that significant course content restructuring and development is needed to avoid any copyright issues and to suit online/ distance delivery.
- It is heartening to note that most students, irrespective of the type of academic programme, language of delivery, including the students of the Faculties of Arts and Humanities, have shown great enthusiasm and interest to learn through online and the

participation of students at online/ distance delivery has been beyond expectation. It was observed that some teachers share additional learning resources available on the web to guide learners to acquire subject knowledge through different online facilities available such as WhatsApp, YouTube, E-Groups etc.

- The cost of accessing online materials and services is not free and students/staff have to pay for Internet bandwidth. In order to promote accessing these learning resources by reducing the cost of access, actions have already been taken by the UGC to provide free data access for both staff and students by providing free access to servers of Universities which are connected through LEARN. The cost of accessing Zoom based online video conferencing has been reduced by hosting servers on the LEARN network to minimize the use of International Internet bandwidth.
- Despite these developments, limitations of institutional IT infrastructure have significantly affected the success of online/distance course delivery.
- Many teachers have found that synchronized online teaching, as an alternative approach to F2F is difficult to be implemented due to heterogeneous problems such as issues with internet connection, limitations of institutional IT infrastructure, bandwidth limitations, lack of technical support and due to congestions in the network and physical disturbances such as weather variation.
- Survey has also found that nearly 50% of the students do not have access to a device to log into the LMS or other platforms such as Zoom as not all students possess laptops or PCs. Some have borrowed them from others to attend the online lectures. Although the number of students having a smart phone is much higher (almost 90%) accessing and following a course on an LMS through a smart phone is challenging and does not provide the same learning experience. Furthermore, considerable number of students have complained about lack of good connectivity (weak signal), lack of data, electricity failures, and safety issues during heavy rains, lightning, and thunder.
- It was also identified that most non-state HEIs too have started online delivery of teaching and learning material during the past month or so using their own LMS platforms or using other ways to deliver their teaching material (e-mail, WhatsApp etc.) albeit that these institutions too have widely varying infrastructure facilities for such online delivery of courses.

3.2. Impact on Conduct of Examinations

Traditionally, in Sri Lanka, closed book written examination is being practiced in schools and HEIs as the main mode of evaluation. There are many shortcomings with this type of evaluation. The main problem being that the students cram for examinations only focusing on passing the test, not learning the material. Thus, students learn just enough to pass the test, and then forget everything they have learned. This completely defeats the purpose of teaching and learning. Focus on final examinations has also brought in the culture of private tuition which is a matter of grave concern in the society. Further, determining whether a student has learnt a subject or not by testing only through a final examination is unfair as many people do not perform well in high pressure environments, such as examinations. A student could be very intelligent and hardworking, but he might be bad at taking tests. The test is therefore unfair because it may not accurately portray a student's full abilities. Much research has been carried out on this aspect and there is numerous published literature available on the merits, demerits, and effective ways of assessing students by different tools and methods.

One of the worst disrupted activities at the HEIs during this period is the conduct of examinations. The main reason for this is the over dependence of universities on the semester end written examination as the sole or major criteria to evaluate the knowledge gained by the

students. Since IT-based teaching/learning activities had not been integrated in the delivery of curriculum / courses, IT based or online based assessments through LMS are also not practiced or available.

If a teacher is planning to use online technologies for assessment, the traditional assessment requires to be restructured as it is not possible to implement F2F traditional examinations. Therefore, a process of reengineering assessment along with educating the examiners is required. Once the teachers understand the value of online evaluation, they will readily accept the process.

The impact on conduct of examinations in the universities and HEIs, positive trends, actions already taken to mitigate the impact and implementation issues can be highlighted as follows.

- The usual practice of conduct of examinations in all universities and HEIs is F2F albeit some continuous assignments are conducted as a part of formative assessment by a few staff members in some institutions where LMS is effectively established.
- During the affected period it was reported that an increased attention was given to use of online/distance mode of formative assessment and a few universities have conducted assignments and quizzes using the LMS for some of the course modules offered. Some faculties have even conducted oral examinations using the Zoom technology for project courses.
- However, no summative examinations which are held at the end of a semester have been conducted by any university during Covid-19 pandemic due to several constraints including its validity and acceptance according to the university by-laws.
- Universities are currently discussing the possibility of introducing different types of evaluations instead of written final examinations. Clearly, these would depend on the subject matter and are to be decided by the individual Faculty Boards and Senates of the universities.
- In order to productively use the idle time, some of the universities have even postponed the semester end examinations and the next semester academic activities have already begun through online modes.
- All the constraints faced by the universities, academic staff and students described in Section 3.1 under the delivery of courses online/distance mode such as issues with IT infrastructure of the institutions, internet bandwidth, cost of data, accessibility, availability of devices, unaffordability of devices by some students, poor signals in remote places are equally applicable in the conduct of assessments and examinations. These Issues will have even a bigger impact and concern when conducting examinations.
- Some non-state institutions have also gone to the extent of providing free data for students to complete their examinations but according to them this could not be affordable by the institutions in the long term.

3.3. Existing Technologies and Facilities for Online / Distance Course Delivery and Conduct of Examinations

The LMS is the heart of delivery as well as assessment of online courses. Many universities use Moodle open-source software as their LMS. Moodle LMS has many features not only can be used in effective delivery of courses but also implement both formative and summative assessments. These features can be used for both online-based assessments under supervised and unsupervised mode of testing. Online/IT based assessment is more powerful than F2F assessments, but such e-assessments must be properly designed and administrated to test the

expected learning outcomes. If the process is properly designed, many traditional constraints could be addressed.

In addition to LMS, other common IT tools and Apps such as WhatsApp, YouTube, E-Groups etc. are used by some teachers to share additional learning resources available in the web to guide learners to acquire subject knowledge. The availability of technologies and facilities at state universities for the online/distance delivery of courses and conduct of examinations was identified through a survey conducted by the LEARN and can be summarised as follows. Please see Appendix 4 for further details.

- The IT facilities available in the HEIs are grossly inadequate to meet the needs of the current student population. About 75% of the HEIs and their entities have stated that they do not have enough IT facilities to even cater the needs of 50% of their student population. Only 6% of the institutes can cater the needs of more than 80% of their student population.
- Seventy percent (70%) of the HEIs and their entities have stated that they would require 40 to 80% upgrading of facilities to continue with online activities beyond the Covid-19 pandemic situation. Further, 14% of the HEIs and the entities say they would require more than 80% upgrading of their facilities to continue with online activities.
- Out of 28 state universities and HEIs surveyed, all except, Postgraduate Institute of Archaeology and National Centre for Advanced Studies in Humanities and Social Sciences have LMS installed in the institutions and are using it for online delivery of courses.
- It has been found that about 40% of the institutes and their entities do not have server facilities to accommodate even 30% of their courses, indicating that a significant expansion of server capacity are needed for efficient use of online/distance technologies.
- Only about 50% of the state universities and state HEIs have e-library facilities for remote access to library facilities by staff and students indicating a need for significant expansion of online facilities in the libraries.
- Only about 33% of the institutes have more than 60% of Wi-Fi coverage in their campuses and 26% institutes have more than 40% coverage while 24% of the HEIs have less than 20% WI-FI coverage.
- Management of LMS is very poor in some faculties due to inadequate technical staff, and sometimes it is maintained by a person who has minimal knowledge and experience in IT due to absence of capable people.
- No formal policies are in place in many Universities/Faculties to guide and train teachers to use LMS effectively when delivering courses and conducting examinations online/ distance mode.
- Lack of experience on online learning practices and unavailability of hardware resources in the faculties also have a direct impact on the success of online delivery. Similarly, practice of examining students online is not very popular since majority of staff do not know about them, not trained and they have not got an opportunity to experiment with these IT tools.

3.4. Impact on Student Enrolment

The impact on student enrolments is identified considering state universities and non-state HEIs separately as their enrolment processes and criteria are very different.

State Universities

After sitting the GCE (A/L) examination, a student will have to wait more than one year to enter the state university even under normal circumstances due to the current system of student selection and various other administrative and academic reasons. The selection process itself usually takes around six months after releasing results which is a concern needing urgent attention. There is a further delay when students are enrolled to universities and commence academic activities due to issues specific to various universities. Due to issues resulting from Covid -19, there is inevitably a further delay and a direct impact on student enrolment and commencement of academic activities. The key features of the selection process, reasons for delays and the actions already taken to mitigate these delays are highlighted as follows.

- The UGC has a well-developed online application processing system from the submission of applications by the prospective students to final selection to individual courses to filling of any vacancies and technologically it is considered as an efficient system.
- The submission of applications by prospective students were significantly delayed due to closure of schools as the school candidates need to obtain the endorsement of school principals before submitting the application to the UGC. As a solution to this schools were kept open for only those students on a selected few days for them to meet the principals to fulfil this process and the online process will be closed by the 2nd of June by the UGC and proceed with the selection process.
- There is a further issue on the methodology of selecting students due to two batches of GCE (A/L) students consequent to two syllabuses as the final consent of the Vice-Chancellors and identification of any additional resources were needed to accommodate the resulting higher number of students under the proposed maximum percentage method. Commitment on the additional resources are needed to finalize the student numbers.
- More than 100,000 applications are received by the UGC every academic year including the applications under normal intake of the current academic year and the special intake applications of the previous academic year. The admissions department of the UGC is currently facing several constraints such as limited storage capacity for applications, lack of staff for speedy processing of applications and space limitations.
- Despite these issues, the UGC is confident that the final selection of students to courses for the new intake can be made available to the universities by the end August 2020.
- However, the actual commencement of the academic activities in the universities for the new students will depend mainly on the actions taken by the universities to clear the final year batches. As the efforts taken by different lecturers, faculties, and the universities to use online/distance mode course delivery and assessment vary significantly, there is a possibility to have varied times of commencement of programmes in different universities.

Non-State HEIs

The usual pattern of enrolling students for degree programmes in non-state higher educational institutes take place twice a year: first, soon after the GCE (A/L) results are released, and the second, after selection for state universities are completed. The enrolment criteria of the non-state HEIs does not depend on GCE (A/L) programme and it is specific to the degree programme and their affiliation to the foreign university.

However, the most critical sector affected due to Covid-19 pandemic situation, is the student groups who enrol to non-state HEIs through 'Interest Free Student Loan Scheme' (IFSLS) and 'My Future Loan Scheme' introduced by the Government. Under these schemes, it is the responsibility of the Non-State Higher Education Division of the MOHE to call applications and select students after completion of enrolment of students to the state universities. They may call

for applications little early, but final selection is done after completion of state university enrolment. During the past few years, it has been observed that these schemes have become popular among GCE (A/L) qualified students, and the numbers are increasing. Any delay in recruiting students to state universities by the UGC, would adversely affect the enrolment of students to non-state HEIs under this category, which amounts to approximately 5,000 students.

The enrolment of fee-paying students (self-funded) at non-state HEIs have been delayed due to the inability of institutions to use common platforms of advertising and the inability of meeting students/parents physically to finalize such admissions. The enrolment of fee-paying students is mainly based on the students/parents physically visiting the campus, reviewing facilities, meeting academics etc. However, under the current circumstances, this has not been possible. However, the non-state HEIs are reverting to online interviews, meetings with students in having tentative confirmation of admissions, until, there is a possibility of prospective students visiting the premises.

3.5. Other Activities of the UGC / Universities during the Affected Period

The industrial and university communities have proven over the years that when facing challenges, ingenuity can yield innovative results. Since Covid-19 created a challenging environment, the proactive engagement of university students and staff in developing innovative solutions to address several requirements that arose due to Covid-19 outbreak is commendable. The domestic need of inventions can be identified only in such crisis situations. As Covid-19 pandemic situation badly affected the academic activities, the UGC and Universities had to actively participate in many activities to minimize the negative impacts on the society and to find alternative ways to move forward. Some of these initiatives have quickly produced results and products directly meeting the mitigating requirements of Covid–19 impact while others are medium to long term research leading to more scientific way of addressing the issue meeting the needs of long term planning. The key contributions are briefly described below.

Innovative Projects to address Social Crisis

- Both university students and academic staff have started working on low cost technology and some of them are very competitive with international technology. Since the National Intellectual Property Office (NIPO) comes under the purview of Ministry of Higher Education, Technology, and Innovations, it is also very convenient to get their assistance to secure intellectual property rights for their inventions and innovations. In addition, university expertise was given to repair medical equipment to meet the projected need.
- These efforts included, restoring of dysfunctional ventilators, manufacturing of several types of face shields, several types of robots for monitoring Covid–19 patients, video conversation systems to facilitate contactless communication, manufacturing disinfectants and sanitisers to help frontline health workers in several ways. (Please see Appendix 5 for details of reported inventions and innovations.)
- With the intention of encouraging university students and staff to come up with inspiring innovative solutions, UGC allocated LKR 5 Mn under university development. When considering these innovative proposals of students for funding, there is a condition that it should be supervised by an academic staff member. So far, the UGC has received fourteen (14) innovative proposals recommended by respective universities and funds have already been allocated for six (06) proposals after reviewing them by expert personnel. UGC is still looking forward to more innovative proposals from students and staff for funding.

Support for Testing and Controlling the Spread of Covid-19

The university system responded at the very onset of the Covid-19 outbreak and initiated PCR testing for the SARS-CoV2 as it was of national importance to do so. Since identification of the first Sri Lankan patient on March 10, 2020, the university system has been helping and carrying out PCR tests. A report on this is given in Appendix 6. Our dedicated team of scientists has been working all seven days, late into the nights, to provide this service through the internationally reputed laboratories that carry out cutting edge research on viral pathogenesis and drug discovery. Following are some of the activities of the university system in relation to Covid-19.

- Several Virologists and MLTs from hospitals and universities have been trained to establish laboratories in their institutions, including IDH and Sri Jayewardenepura hospital.
- Academics have established the technique of whole genomic sequencing in Sri Lanka. This research of sequencing more virus strains will be continued to find out if certain strains contribute to virulence and if critical mutations occur in the viral strains in Sri Lanka.
- While most patients develop mild symptoms, some individuals develop pneumonia leading to fatalities. The academics are in the process of identifying inflammatory mediators and possible biomarkers to identify such people and to find factors that cause severe disease.
- Assistance has also been provided to the MOH in evaluating many PCR kits, RNA extraction kits as well as rapid antibody test kits of Covid-19.

In addition to the above activities, the hostels of some universities have been given as the quarantine centres to be used for the students those who are returning from foreign countries or to be used by armed forces personnel involved in Covid-19 containment. List of the hostels given as quarantine centres is given in Appendix 6.

3.6. Harnessing of Other Opportunities

Despite its negative impact, Covid–19 also compelled university communities to learn some of the good practices using the opportunity which are difficult under normal circumstances. Given below are some of the practices which will make a new normal in the entire set of activities of the universities and if actions are taken to institutionalize these new practices and trends, it will significantly enhance the productivity of human resources and efficiency of university activities.

- **Online Meetings to Manage University Administration –** In general, meetings of the universities/UGC are held in a F2F context, which requires many resources and manhours for even a small meeting that is less than an hour with some participants travelling from Jaffna to Colombo. Present pandemic situation has forced all staff to attend online meetings, and it was a great opportunity in the system to change the culture and practice. During this period, many universities held their council, senate, faculty boards and large number of administrative meetings on a regular basis, even sometimes going into late in the night or during the weekend and public holidays.
- **Electronic Communication to Connect with Staff and Students** - Email is not a new concept in the university system and majority of the staff are using it. However, there is a minority who did not believe or practice electronic communication to relate to others due to various reasons. The present situation challenged such subgroups to change their behaviour and adopt email and other online communication mechanisms such as WhatsApp, Viber, and Messenger.
- UGC also started communicating circulars and formal decisions through email to respective heads who immediately shared with relevant groups in the universities. Things that usually take many weeks to communicate, are sent to all stakeholders within a few

minutes. This paperless communication channel has saved resources and associated costs.

- **Paperless Document Management using e-Signatures with Digital Certification** - Electronic documents with e-signatures and digital certificates are legally accepted in Sri Lanka for the last 15 years. However, changing the respective officers to accept e-signatures and digital certification using existing IT infrastructure was almost impossible due to various bureaucratic reasons in the administration. The exchange of printed documents among several parties including unknown outsiders creates a threat to several individuals in a working environment. To minimize such a risk, the best alternative is to develop a process in which officers could digitally place their e-signatures or digitally signed.
- **Experience of Work from Home (WFH)** - The work from home is not a practice in the university administration and time-based attendance is the main framework to carry out the duties. In some places, reporting to the work on time and leaving the office on time is more important than the actual work that was delivered. The work was hardly measured and recorded based on the activities carried out. The WFH has changed the mind set and the situation is creating a new working culture that must be promoted to improve the productivity irrespective of the location of the work.
- **Healthy Practices in Working Environment -** Healthy practices are based on the personal decisions, where some individuals could decide their own course of actions. Sometimes, people think about their work than others and well-being of co-workers. For example, if someone got a flu in an office, few others could easily get it due to carless behaviour of all parties. The present situation has changed such a culture where an individual is forced to think all others in his working context/home including him/her, which could have a huge impact on the well-being of the workforce.

In addition, several other opportunities were made available for the universities and university academics to carry out research and development using other funding sources and leveraging of other externally funded projects as follows.

- During Covid-19 critical period, AHEAD project funded and supported many new innovative projects through University Business Linkage Cells (UBLs). Through these projects several new products were developed for the use of hospitals, frontline health workers and general public.
- The web app "CONNECT AHEAD" launched in December 2019 continued to provide information to the private sector and universities to identify suitable research teams to partner with. AHEAD welcome all industries wanting to partner with universities and all university academics interested in partnering with private sector to connect through the app by visiting https://ahead.lk/connect/.
- The Science and Technology Human Resource Development (STHRD) Project funded through Asian Development Bank (ADB) which is designed to support the government of Sri Lanka to develop Applied Science and Technology faculties in universities has been flexible in extending their support for facility enhancements for online/distance teaching albeit these have not been materialized yet.
- University academic staff were also active in deploying other research and development projects responding to special project calls aiming to mitigate Covid-19 impact. For example, the National Science Foundation commissioned focused research and technology development and transfer with a view to combating Covid-19 and mitigating its impact, particularly on health and agriculture (including fisheries) sectors requiring fast track high-impact results. Priority was given to proposals bringing together the best in the country to deliver speedy solutions to burning national issues following the pandemic.

These projects will result in significant benefit although they may take more time to complete.

4

Proposals and Recommendations to Mitigate the Impact

Proposals/recommendations to mitigate the impact of issues identified in the previous section are given in this section. These recommendations are classified under teaching and learning, conduct of examinations and expeditious student enrolment. The last sub-section discusses the measures that could be taken to improve and sustain the proposed activities.

4.1. Development Needs of Online/E-Learning/Distance Education Technologies for Teaching and Learning

Teaching and Learning (TL) is the most important integrated component in the education process. Due to Covid-19, TL has been directly affected in all state and non-state HEIs irrespective of different processes and level of resources. The present situation is a new challenge and a threat that must be addressed immediately to maintain the continuity of education during next foreseeable future. Some of the issues could be addressed through short term measures but long-term action plan is required for the sustainability of the education.

Distance education is practiced as a special mode of education in HEIs except the Open University of Sri Lanka which considers it as the primary mode of course/programme delivery. Integration of Information Technology with the teaching and learning processes in the context of Internet based online environment promoted the e-Learning practices in HEIs. E-Learning is used to modernize the traditional distance education as well as to improve the quality of conventional F2F education which is known as the Blended Learning (b-Learning). There are many benefits and opportunities for HEIs if b-Learning is introduced with best practices using facilities of IT infrastructure.

Information Technology infrastructure is usually developed considering all students on the campus, as a result, we see large computer labs with time schedules allowing the students to use those machines during fixed time periods. In the modern world, computing is a pervasive facility that should be available on-demand while engaging in other academic activities. Hence, computing resources will have to be made available irrespective of time and location.

Information Technology enhanced Education process is an important need of 21st Century Education and following recommendations are made to address the issues described earlier for prompt implementation in HEIs.

- Establishment of LMS should be considered as a compulsory part of infrastructure of a faculty/institute of a University. Unavailability of sufficient IT infrastructure and/or qualified technical staff are the major reasons that have affected to set up an LMS in a faculty. If a faculty does not have strong IT infrastructure to set up 24/365 online service, faculties should be supported to obtain a cloud-based service to set up LMS from the main campus or external trusted party such as LEARN.
- In some HEIs, LMS is an additional facility for teachers to distribute learning resources or to interact with learners. There are no formal policies in HEIs to make the LMS as a part of education process in the faculty. Some teachers do not have required competency to set up their online courses in the LMS. Therefore, the policies and training/support must be made available to facilitate setting up LMS in all faculties.

- Instructional design of the blended/online Learning courses are different from those of F2F courses conducted in programmes. Teachers must be supported through respective staff development centres to revise the curriculum of courses to suit blended/online delivery as well as online course material development. Online courses/workshops/seminars should become a regular programme in the staff development centres to provide the awareness and training of blended/online course development among the academic staff.
- The development of blended/online course materials require special tools/equipment as well as additional human resources at the faculty level. Hence, it is required to formalize the process by establishing an e-Learning Centre in each faculty, and with the responsibility to undertake the maintenance of the LMS.
- Academic discipline intended learning objectives/outcomes, content of course, duration/ credits are some factors that affect the design and development of Blended/Online courses. It is a creative process which depends on innovative practices of teachers to integrate IT in the delivery of courses. HEIs should have a policy to recognize all such efforts to promote, support and recognize such efforts in the academic process.
- The development of IT infrastructure is crucial for the success of blended/online courses in a faculty. Computing devices for all stakeholders and Internet access through the Local Area Network LAN/Wi-Fi in the faculty are fundamental components in this infrastructure. Hence, it must be a part of the strategic/action plan of the faculty/university.
- The success of blended/online learning depends on the access to learning materials by the students. Hence, they must be able to use their personal computing devices such as laptops/tabs/smart phones to access/interact with LMS from their residence. All students who will join HEIs should be facilitated to acquire a laptop computer and a smart mobile device (tab/phone) according to his preferences and requirement. Since students have different financial backgrounds, it is important to establish an educational loan facility which will facilitate students to buy these personal devices required for academic activities. The cost of data access could be minimized with special Broadband Access packages.
- Online collaborative working environment with video conferencing facility is crucial for the blended/online interaction among students and teachers. For example, Google Classroom, Meet, Microsoft Team and other tools, and conferencing through Zoom. HEIs should support students and staff to use these facilities for academic activities.
- The LMS could be extended to Virtual Learning Environment (VLEs) of faculties by integrating e-Library facility and other student services for efficient management of academic activities in the Universities.
- The Sri Lanka Qualification Framework (SLQF) should incorporate policy guidelines for e-learning, e-teaching, and e-assessments. This way, it will facilitate a uniform standard while addressing the quality assurance issues due to expansion of education using blended /online modes of delivery.
- Additional resources and cadre for academic support staff should be provided to HEIs, which will increase the intake using blended/online mode of delivery of courses in degree programmes.
- LEARN currently supports all universities by connecting all networks of universities by providing a high-speed Internet connection. Since IT infrastructure vary from a faculty to faculty in a HEI, it is important to provide a Cloud based service from a trusted party within the network. LEARN is the most suitable entity which could provide such services

to all HEIs and the support must be given to LEARN to start providing cloud-based services to faculties/HEIs.

4.2. Development Needs of Online/E-Learning/Distance Education Technologies for Conduct of Examinations

In this section, we propose the recommendations to implement the online/IT based assessment in HEIs based on the issues identified in Section 3.2 of this report.

The assessment of a course can be classified as formative and summative based on the learning outcomes and time of conducing the assessment in the course. The formative assessment is given as continuous assessment during the learning period of the course and summative is given at the end of course. The assessment rubric of a course defines the weightage factors of formative and summative assessments. If a teacher is planning to use online technologies for assessment, the traditional assessment requires to be restructured as it is not possible to implement F2F examinations as it is. Therefore, the process of assessment must be re-engineered considering facilities and limitations in Information Technology. When e-Assessments are introduced in courses/programmes, the quality as well as efficiency of the evaluation in programmes will improve while addressing several other issues.

All assessments could be classified as supervised and unsupervised based on the mode of conducting them. Final examinations/summative assessments are conducted in the supervised mode with a strict set of rules and regulations, since universities are responsible to certify the grades based on the validity of students. In unsupervised assessment, the student validity is not usually verified, and the creditability/value of grades given assessment is lower than that of supervised assessment. This situation is the main argument used against the online assessments/ examinations. However, there are three methods which could be used to validate the grade and the examinee, as follows.

- The submission of assessment could be validated using plagiarism techniques/tools against the peer-submissions or large collection of similar materials.
- After the submission, the examinee could be cross-checked using an online/F2F viva to identify the integrity and to validate learning outcomes.
- Methodology, procedure, software/tools, and system/framework could provide the meta data during the assessment to carry out an audit of examinees behaviour against the rules and conditions during the assessment.

If a HEI could provide the unsupervised assessment with one or more validation methods given above, the grades of assessments/examinations could be validated with documentary evidence.

To mitigate the impact on examinations/assessments, following recommendations are made for prompt implementation.

- Teachers must be encouraged to use the facilities in LMS to implement the formative assessments in all courses. HEIs/Faculties will have to provide IT facilities and support using academic support staff to conduct online formative assessments with some form of validation as given above.
- HEIs/Faculties should develop guidelines for online assessments to promote the best practices based on the academic disciplines in the faculty and experience of teachers who have practiced e-assessments in formative and summative modes with some validation methods.
- HEIs/Faculties will have to carry out investigation to find out the feasibility of integrating the information technology with summative assessments/final examination of courses. It is recommended to establish separate assessment system using Moodle based LMS with suitable control features. Such a system could be used to conduct supervised examinations

within the universities with social distancing among examinees. HEIs could use remote examination centres to conduct off campus online final examinations.

- World-over many educational institutes are now using different evaluation methods to ascertain the learning outcomes of courses. These methods also vary based on the nature of subject matter. For example, MCQs based quizzes, mini-projects for problem based learning, oral/poster presentations based on the assignments, publishing/sharing experience of individual/teamwork, portfolios, structured tests, student journals, oral viva and interviews, questionnaires, focus group discussions, open-book tests, continuous/ daily/weekly quick assessments, online exams in both supervised and unsupervised environments, solving real life problems and peer-assessments of personal/group work. Information Technology could be used to provide these assessments through an online system in a supervised/unsupervised environment depending on the requirement. HEIs/ Faculties need to promote these practices among the academic staff to integrate online/IT based e-assessment.
- All examination by-laws and regulations should be upgraded to facilitate the conduct of formative/summative assessments with online/IT integration to provide the formal acceptance.
- IT infrastructure together with Internet bandwidth is very important within the campus network to conduct online/IT based assessment in supervised/unsupervised modes. When remote assessments are conducted, technical issues such as low bandwidth, cost of data, availability of required devices/tools as well as issues such as power failures, bad weather conditions should be considered. Since all staff/students do not understand these practices /issues, it is better to appoint online exam coordinators trained for e-assessments in HEIs.
- It is very important to provide the training to the University administration to contribute to the conduct of online/IT based assessments. Staff Development Centre (SDC) could conduct regular programmes to address all different stakeholders in the process. For example, MCQ based tests could be conducted using a question bank rather than a fixed set of questions in a course. Several controls could be introduced both technically and pedagogically to minimize different malpractices that student could do during online assessments/ examinations. Some online assessments could be marked automatically but many require direct marking by examiners. The advantage of these is the saving of cost and time.
- It is very important to take actions to minimize malpractices that could happen during online assessment/exam. For example, students could be asked to register their personal devices, if those devices are used during online assessments/exams later. HEIs/Faculties also should acquire certain software tools/packages which could be used to minimize malpractices or verify submissions of online assessments.
- Software tools such as Turnitin for plagiarism checking and Lockdown browser to control when a person undertakes online assessment, could be employed. All these tools and methodologies have limitations and it will be the responsibility of universities/faculties to design and implement online assessments/tests while minimizing the malpractices.

4.3. Development Needs of Technologies/Actions for Expeditious Enrolment

The waiting time to start the academic programmes in the universities has become a critical issue due to several constraints and is also a threat to state sector education. These delays are mainly systemic and process issues needing attention of multi-stakeholders. The key constraints and some proposed interventions are listed below.

- The UGC has to wait until GCE (A/L) re-correction results are released to process university selection as the effect of change of results has a significant impact on the list of students selected before and after the re-correction due to the present university selection criteria which is based on 40% on merit and 55% on district quota for the majority of the courses. Thus, there is a great need to expedite the issue of re-correction results to speedily commence student selection to universities.
- There is also a need to get results of candidates verified. The UGC has now taken steps to create an online link with the Department of Examinations to get the GCE (O/L) and GCE (A/L) results immediately verified, without resorting to the current time-consuming paper-based communication.
- The current practice of manual checking and vetting applications for university selection takes long time needing lot of staff time and storage space. The UGC is currently in the process of getting a new system for checking and vetting of applications developed, which automates many manual steps leading to speedy processing of applications.
- Currently, the UGC is responsible for selecting students under the normal intake and filling of vacancies. Filling of vacancies due to non-registration of students takes 8 to 10 rounds every year, for some courses, consuming nearly 3 to 4 months after the first selection and the UGC must wait for this process to complete, so that the final list with sufficient number of student registration are sent to the universities.
- However, as the number of new registrants after the first two rounds is small, it is suggested to handover rest of the selection of students, to universities letting them advertise their vacancies and get them filled on an all island merit basis. For this purpose, existing admissions policy needs to be changed, since most of the vacancies are filled based on a district quota system.
- With these constraints the UGC's Admission Department carries out an enormous workload working seven days a week and into late hours during the period of student selection. At least, as a temporary measure, until these systemic and process constraints are sorted out, allocation of more staff and space is required to reduce delays in student selection.

Irrespective of all these, several months of waiting time for the students is unavoidable. This year, the waiting time will be more due to the reasons already mentioned. In order to productively use this waiting time, online/IT technologies could be successfully used to impart knowledge and develop English language skills needed to effectively follow university courses and to develop employable skills.

With the intention of productively utilizing the waiting time effectively and reducing the time on pre-academic/induction programmes, a Pre-University online English language programme will be organized by the UGC for the new university entrants starting from 2020. In the future, this programme will be linked to the Virtual University of the UGC, facilitating all those who will be eligible to register for higher education based on their GCE (A/L) results to follow this course. More details of this pre-university English course is given in Appendix 7.

Furthermore, online/IT facilities could be used to deliver at least 30% of most courses and for some courses this could be more than 80%. HEIs could use this formula to productively utilize the waiting time by offering online/distance courses to new students before they start F2F sessions.

4.4. Sustainability and Continuous Improvement Efforts

During the Covid-19 pandemic, many universities in Sri Lanka, delivered lectures over Zoom platform. Some of these lectures are delivered live to students and while others are recorded

and placed on the LMS, followed up with discussion classes/forums. These two ways of delivering online education needs to be clarified. First type is the use of online video conferencing tools, for delivering teaching lessons in real-time, which is Real-time Online Teaching (ROT). In the second type, courses, teaching, and learning activities are conducted online via learning management systems (LMS) and these are Online Delivery Courses (ODC).

To plan for sustainability and continuous improvement of the efforts that have been taken during the Covid-19 pandemic, it is important to understand the merits and demerits of ROT and ODC. According to experts, though in Sri Lanka and world over during Covid-19 pandemic times ROT is practiced, once the pandemic ends, universities will have to go to the ODC model. This is because of the inherent drawbacks in the ROT. Already many articles have been published about negative impacts of ROT on students.

In most instances, ROT is one-way communication and have very minimal interactive components. Learners may feel ready and interested if they use ROT for one or two subjects per semester. However, it would not be comfortable for them to be online sitting alone in front of the computer for listening to 8 to 10 lectures a week. With this type of lectures, students will not be attentive for extended periods and will lose concentration and soon move away from their studies as it is difficult for them to exchange ideas with teachers and interact with their peers as in a physical classroom.

Whereas, ODC can be used in different modes, such as delivering the whole content of the course online; a part of the content online and the rest traditional face-to-face; or, used as a channel to supplement and reinforce traditional courses. As such, it is possible to combine two methods – online and traditional teaching – into blended learning. In ODC mode, ROT-type lessons can be organized in different ways, such as inviting experts in a relevant subject to talk or exchange ideas with learners, running Q&A sessions or conducting seminars in groups among learners. With those activities done online, the work done in the physical classroom will focus on discussion, clarifying the contents or expanding lessons, doing experiments or practices, applying what students learnt into reality, and evaluating learners. Therefore, it is apparent that sustainability and continuous improvement efforts should be directed towards ODC.

Another important area to maintain sustainability and continuous improvement is partnerships and internationalization. In this country, many people and institutes are reluctant to partner and share resources with others fearing competition and loss of potential students and revenue. However, it is obvious that the demand for higher education in the country is so high that all HEIs that are currently in operation cannot meet the demand even if they enrol to their maximum potentials. In this context, HEIs require a new understanding of the context in which they operate and strategies they need to develop to ensure relevance, value, and sustainability. It is imperative that HEIs become active partners in the process of managing and addressing the broader challenges in the political, economic, social, and environmental realms and contribute tangibly to the sustainability and improvement of the human condition.

Sri Lankan HEIs should become new generation educational institutes who will recognize the need to provide unrestricted access to high-quality education for all, through a deliberate focus shift to inclusivity and affordability. There can be no question that the time has come for urgent actions around reshaping higher education in Sri Lanka, into this type of adaptable, flexible and relevant model that ensures access to life-long learning opportunities that prepare people to fully and effectively serve society. All HEIs and academics should work cohesively with a spirit of sharing. For this purpose, collaborative arrangements among the state and non-state HEIs of the country with the prime objective of contributing towards the development of the nation should be devised. This has become a norm in the developed world where universities are banding together to conduct not only research but also to offer study programmes.

Therefore, one of the ways Sri Lankan HEIs could address the issue of sustainability and continuous improvement is by forging strategic partnerships with both local and overseas partners as it is done in several countries.

5

Higher Education Beyond Covid-19

The Gross Enrolment Ratio (GER) in tertiary education in Sri Lanka is only about 20%, being the lowest among all middle-income countries and below the average value for South Asia, which is 24%. Further, like most developing economies, Sri Lanka faces significant brain drain. According to World Bank statistics (World Bank, 2011), Sri Lanka has one of the highest rates of brain drain among the South Asian countries with 27.5% of those who received a tertiary education have already migrated with an average annual migration level of 6,000 professionals. Therefore, as a country Sri Lanka does not have a choice but to further expand the higher education sector to bridge the gap. Though this is an ambitious but inescapable objective, with a series of synchronized actions, particularly in the areas of human and financial resources, academic program curricula, teaching and learning methods and assessments, and governance and management the objective could be realized.

Moreover, to advance as a middle-income country, Sri Lanka should acquire and use technologies of higher complexity, quality, and productivity, to generate a continuous stream of improvements and innovations. Furthermore, to reap the full benefit of universities, frequent disruptions occurring in universities due to various reasons need to be addressed.

The existing tertiary education sector, which could be broadly categorized as conventional Binary System consists of dominant state-run universities/institutions, and a relatively underdeveloped alternative higher education sector with a slowly emerging sub-sector of non-state HEIs. Though there is a dire need to expand opportunities for tertiary education, the consolidation and harnessing of the non-state sector as a key player has not been achieved yet due to absence of a conducive legislative and regulatory framework which would enable them to operate along with the state universities and alternate higher education institutions.

Thus, it is imperative that ground-breaking changes are infused to transform the tertiary education sector to a more globally proven tri-partite system consisting of three key types of HEIs, namely,

a) State and Non-state Undergraduate HEIs

b) Undergraduate/Postgraduate Research Universities, and

c) State and Non-state Vocational and Professional Institutions

The main aim of this reform proposals is to meet the following objectives with respect to tertiary education in Sri Lanka.

i. Improve access to tertiary education

ii. Provide more flexibility and mobility within and among the three tiers/sub-sectors of HEIs

iii. Offer well delineated diverse education, training, and career paths

iv. Enhance standards, quality, and relevance of the types of education/training offered

v. Promote postgraduate education, research, innovation, and commercialization, and

vi. Promote income generation and disbursement

To ensure the fulfilment of these objectives, this report proposes to adopt strategies and formulate action plans under the following ten specific goals.

1. Restructure the Higher Education System with appropriate Legislation
2. Promote Efficiency in HEIs by Reforming Governance
3. Harness Evolving Technological Potential to Provide Rewarding Teaching and Learning Experience through Online Learning
4. Enhance the Relevance of Higher Education
5. Expand the Services of the Open University of Sri Lanka
6. Enhance the Competencies and Skills of non-STEM Graduates to Support Country's National Development and Growth
7. Establish a Virtual University to increase access for higher education
8. Expand the non-state sector of Higher Education
9. Promote Research and Development, Innovation and Technology Transfer
10. Ensure Quality Assurance in Higher Education

In the foregoing pages these goals are further expanded by elucidating the strategies and actions that need to be formulated to achieve them.

Goal 1: Restructure the Higher Education System with appropriate Legislation

One of the most crucial activities in the process of restructuring the higher education system in Sri Lanka, is reconstituting the existing Universities Act No. 16 of 1978, enacted four decades ago, when there were fewer than six universities. Though this Act brought far reaching changes and stability to the higher education sector and paved the way for expansion of the university sector over the years, it needs overhauling to keep pace with the globalized economy and the unprecedented advancements occurring in the field of higher education. The present university system is characterized by both strong institutional autonomy and tight central control thus resulting in neither accountability nor performance. Therefore, the existing Universities Act and accompanied regulations need to be amended appropriately to make the UGC an effective apex, regulatory and facilitatory arm of the higher education sector and act as a catalyst to a series of reforms as highlighted below.

- Grant greater autonomy to established universities to facilitate mission differentiation
- Revise the existing university admission criteria to
    - increase fairness, transparency, and avoid delay in admission process
    - ensure all universities operate at full capacity with all student placement filled
- Expand university intake by
    - establishing university colleges/campuses affiliated to established universities
    - establishing City Universities that offer courses relevant to development requirements of the local areas. [For example, a city university in Nuwara-Eliya can specialize in tourism, plantation agriculture, food processing, etc.] Though, these city universities shall come under the purview of the UGC, the selection of students, and identification of study programmes to be managed by the institutions with emphasis on local needs with a common goal to promote localized entrepreneurship.
    - establishing a new university for Science, Technology, Engineering and Mathematics (STEM) with international expertise and donor assistance.

- increasing student intake to programmes offered by Advanced Technical Institutes.
- upgrading selected ATIs to 'National Institutes of Advanced Technologies' with degree awarding status to provide higher educational opportunities for those who qualify from the GCE (A/L) in STEM streams.

- Institute proper regulations and oversight mechanisms to facilitate private sector investment to establish non-state and public-private partnership universities to attract local and foreign students.
- Facilitate non-state HEIs to accommodate applicants/students who have returned to Sri Lanka due to Covid-19 to study on-line with necessary facilities and processes.
- Enable foreign universities to consider developing collaborative study programmes with local HEIs, both state and non-state, including online.
- Enable both state and non-state HEIs to offer joint degrees with local and foreign partner institutes.
- Promote institutional capacity to enhance quality and relevance of educational provisions and adopt blended learning with an appropriate mix of conventional and ICT-based tools.

Realizing the timely requirement in amending the University Act No. 16 of 1978, an expert committee consisting of three (03) consultants has already been appointed to work with the UGC. It is expected to develop a completely a new Act through thorough stakeholder consultation and learning from best practices of other countries.

Goal 2: Promote Efficiency in HEIs by Reforming Governance

Good governance is important in higher education, as a university is, in many ways, a much more complicated organization than a commercial organization. Good governance informs and facilitates decision-making which, in turn, enables a university to grow and prosper and ensure sustainability is achieved. Coupled with accountability and transparency, governance as an overarching framework, allows a university to be sustainable in the long-term. In this respect, following are recommended based on detailed stakeholder deliberations, to reform governance of higher education sector to promote administrative and financial efficiency.

- Restructure the MoHE to equip the Ministry with divisions/units as well as the capacity to undertake all administrative, regulatory functions more effectively and efficiently.
- Form a new regulatory body within the MoHE, called Non-State Higher Education Council/ Authority (NSHEC/A) with a mandate to grant approval to non-state HEIs to operate in parallel with state HEIs and to regulate and monitor operational aspects, standards and quality of all study programmes offered by non-state HEIs.
- Inspect various resource allocation models and fund utilization by state universities and adopt appropriate reforms for allocating funds to make them more results oriented and to have improved performance and accountability.
- Adopt strategic management concepts and performance-based funding linked to the strategic development plans of the universities.
- Introduce supplementary resource allocation system (such as UGC discretionary grants) to initiate performance-based financing and encourage universities to emphasize and expand priority fields of study.
- Introduce appropriate institutional and establishment reforms to ensure all universities have institutional mechanisms to:

- adopt strategic management approach with short and long-term planning with meticulous implementation and monitoring (Office of Strategic Planning & Monitoring)
- promote adoption of global trends in higher education reforms in curricula, teaching and learning methods and assessments and continuous quality enhancement (Office of Academic Affairs)
- strengthen research and innovation efforts in collaboration with external organizations – national research organizations, private sector, and with overseas universities and institutes (Office of Research and International Affairs)

- Introduce Key Performance Indicators (KPIs) that reflect national and individual state HEI priorities, with scorecards to monitor performance and to reinforce the accountability of state universities by introducing performance-based funding.
- Eliminate all non-core ancillary services in universities, which do not have any comparative advantage and instead use Private Public Partnerships to provide such services.
- Encourage mission-differentiation among HEIs in line with global developments, particularly for established universities that have already earned international recognition to become 'world class' undergraduate, postgraduate and research universities.
- Establish a conducive and harmonious learning environment in national universities by eliminating all forms of intimidations such as inhuman 'ragging', sexual and gender-based intimidation and violence, student agitations, etc. by implementing appropriate deterrent measures, effected through law enforcement agencies and judicial measures.

Goal 3: Harness Evolving Technologies to Provide Rewarding Teaching and Learning Experience through Online Learning

The modernization of the higher education sector in Sri Lanka is an important requirement to address several issues that have become bottleneck for the development of the country. According to many studies, increasing demand for higher education cannot be addressed by building or expanding new brick and mortar universities and invariably, distance education and online learning has to play a crucial role in providing access to education for all who want to learn. World over, online learning continues to grow, demonstrating that institutions remain committed to expanding programmes that meet the needs of today's students. Appendix 3 gives a description of initiatives that have been taken in various countries on expanding online learning.

Three essential components must be in place for online education to be effective, namely, Technical Requirements, Learning Resources and Learner Support. Following are some of the recommendations to strengthen and enhance online learning opportunities in Sri Lanka.

- Form a Sri Lankan community of Moodle LMS Coordinators and Administrators of the individual HEIs to address technical and pedagogical issues that may arise when providing online teaching/learning with the Moodle LMS, including the Sinhala and Tamil versions in Sri Lanka. The widely used, free and open-sourced (FOSS) Moodle LMS is adequate to meet the needs of Sri Lankan educational community.
- Develop proposals to expand bandwidth capacity provided by LEARN to meet the future needs of the HEIs. During normal times, most universities did not have major issues with bandwidth. However, with increased traffic during Covid-19 pandemic, LEARN found it difficult to meet the demand. This is expected to further increase in the post-Covid-19 times as most universities adopt online learning to supplement normal teaching.

- Expand the scope and capacity of LEARN to provide cloud based infrastructure needs to offer courses online, including server space, as providing uninterrupted service is an issue in many institutes as the number of courses and online activities in the LMS increase.

- Plan and implement interventions to provide access for students, especially for those among the economically disadvantaged segment of the society, to a device to connect to the LMS, and adequate Internet connection, as lack of these is a major deterrent and equity issue with online education. Following are some of recommendations to address this issue:
    - Provide computer facilities at centralized places in local neighbourhoods
    - Explore the option of providing a device to all university students. It need not be an online device but a device that can be loaded with learning resources and can be accessed from homes. Aptus of the Commonwealth of Learning, deployed in 28 countries including India and Pakistan, is a good example. It costs less than US$ 100/-.
    - Introduce a loan scheme for needy students of all HEIs to purchase laptops/computers is necessary for those who cannot afford to buy.
    - Pursue the Telecommunications Regulatory Commission of Sri Lanka to ensure ISPs will continue to provide 'free access' via LEARN in the future as well.
- Launch a national project to establish one-place national repository of multiple mode learning resources and other resources where all e-resources could be stored and accessed by students in Sri Lanka. Such online repository allows storing good quality learning resources developed by the best teachers to be shared by all stakeholders.
- Develop a national Open Educational Resource (OER) policy. As Creative Common (CC) license through which most OER materials are published allows for Reuse, Retain, Revise, Remix and Redistribute, academics can alter and adapt the materials to the local context and in their curriculum. Further, many world-class learning resources, including videos and animations, published under the CC license could be translated into local languages. It also allows academics from different universities to combine their expertise and produce high-end learning resources to openly share among all institutes. MOHE and MOE should jointly develop the national OER policy with the participation of UNESCO and COL.
- Initiate discussions with international agencies, institutes, and course providers such as OERu, Coursera, edX, Udacity, Udemy to offer courses developed by world-class universities to Sri Lankan students as well as to offer courses developed by Sri Lankan academics to local and global audience.
- Develop policy guidelines for students to offer and obtain credit exemptions and credit transfers based on courses completed through the national online portal, university portal or from international providers, subject to maximum limits.
- Establish Learner Support Units in the HEIs to provide learner support interventions which are indispensable in online education, known as e-facilitation.
- Expand the facilities for web conferencing systems such as Zoom, Big-Blue-Button, Microsoft Team and Google Meet to reach students in remote locations.
- Create video lectures for synchronous and asynchronous teaching/learning. To create video lectures in studios, current capacities should be strengthened and expanded, especially for universities away from Colombo.
- Create audio lectures for asynchronous learning through the LMS and dedicated radio channels for education.

- Encourage the use of social networking tools such as Facebook, WhatsApp, Hangout, Signal, Twitter, etc. to be in contact and engage with students. HEIs could establish e-Portfolios to establish educational social networks connecting both internal and external communities.

Goal 4: Enhance the Relevance of Higher Education

Relevance is an important requirement in the education sector since it directly relates to many aspects, including employability. Relevant education provides students with the tools to deal with and find solutions to the challenges in real life, going beyond the curriculum of the courses. In a changing world this means that what was considered relevant education yesterday may not be considered relevant to the requirements of the society and the individuals of today. This is particularly true at present due to rapid changes created by new technologies. Relevance in higher education can be implemented with a framework of processes that centre on planning, design, implementation, monitoring, review, evaluation, and improvement. A University that strives for relevance, helps the system to continuously adjust itself to the changing knowledge requirements of the society. Considering this dynamic nature following are some of the recommendations to enhance the relevance of higher education in the Sri Lankan context:

- Accelerate the ongoing curricula reforms of academic programmes by adopting Outcome-Based-Education (OBE) and student-centred learning and assessment approaches.
- Integrate modern ICT technologies and learning assessment methods while facilitating to learn beyond curriculum.
- Establish a national level training institute, called "National Institute of Higher Education" with international donor assistance to promote the adoption of modern educational technologies and to promote Continuous Professional Development (CPD) of academic and managerial staff of universities.
- Strengthen concessionary loan-schemes for qualified students to facilitate enrolment to priority programmes for economic development and job-oriented technical education programmes in accredited non-state HEIs.
- Introduce a sustainable scholarship scheme with donor assistance for academics of priority disciplines for obtaining overseas postgraduate education.
- Reform the process of hiring academic staff to the universities with flexible possibilities of hiring adjunct academics from the industry and overseas to overcome staff shortages.
- Enhance the quality and relevance of external degree programmes to suit the requirements of the country and graduates.
- Make industrial placement/service learning as compulsory non-GPA courses in all degrees
- Establish e-Portfolios to record extra-curricular achievements of students to formalize soft-skill development.

Goal 5: Expand the Services of the Open University of Sri Lanka

The Open University of Sri Lanka (OUSL) which was established in 1980 as an exclusive Open and Distance Learning (ODL) has a diversified student population, exceeding 40,000 consisting of three prominent groups: matured students pursuing higher education at mid-career level, young qualified school leavers, whose admission to the conventional universities has been denied due to severe competition, and other persons who aspire to acquire knowledge for different reasons. The OUSL has the model, system, and structure to expand to accommodate

100,000 students over a period of 5 years with certain interventions from the state. The network of regional and study centres of the OUSL established throughout the country helps to successfully reach students scattered in different localities of the country.

The regional network and the facilities provided by the OUSL have not only helped to overcome the physical distance between the teacher and the student but also has removed language, ethnic, social, and cultural barriers to higher education. It has also considerably reduced the incidental cost of education to students. Development of the regional network has created an ambiance to improve social equity across the country.

In the recent years, the OUSL has been implementing many initiatives driven by technology, such as online teaching through the university's Moodle LMS, OER based learning material and Video conferencing facility through Big-Blue-Button, connecting all the OUSL Regional Centres thus decentralizing academic programme delivery effectively and efficiently with minimal need for a student to come to the campus. University has already developed plans and is in the process of implementing them to provide online support to all courses offered by the university, provide learner support through dedicated video and audio channels, online registrations, e-administration, e-library, OER repository, expanding the video conferencing facilities to the study centres, etc. and thus transform into digitalized university.

It is proposed to implement the following strategies to increase the student population of the OUSL to 100,000 in the next five years.

- Develop the Regional and Study Centres with necessary infra-structure and human resources to handle both present as well as new programmes and large number of students.
    - Currently almost 50% of the students are registered at the Colombo Regional Centre. The main reason for this is that many of the centres do not have necessary facilities to decentralize certain academic activities.
- Offer new inter-disciplinary and inter-faculty programmes through appropriate combination of existing, modified, or new courses to make them employment oriented and suitable for students coming with diversified qualifications and experiences.
    - The university has already initiated discussions with other course providers such as Coursera to adopt available courses into the curriculum of the university.
- Introduce institutional reforms enabling the centres to administer academic programmes independently while being accountable to the central campus. Such reforms are vital to ensure quality and smooth functioning of the university.
    - The University has already forwarded its recommendations to the UGC to effect amendments to the existing ordinance of the university.

Further details of the proposal are given in Appendix 8.

Goal 6: Enhance the Competencies and Skills of non-STEM Graduates to Support Country's National Development and Growth

Developing graduates with a range of competencies and skills they will need to navigate an ever-shifting workforce is an important requirement for study programmes run by Universities and HEIs. A tracer study of graduates completed by the UGC in 2018 found that out of 1,265 graduates, 65.5% were employed. The study further found that fields such as Computing/IT has the highest employability (>90%) while Arts (45.6%) and Performing Arts (37%) had the lowest across Universities. Thus, following interventions are recommended to increase the competencies and skills of non-STEM graduates to face the challenges of the rapidly changing world.

- Provide undergraduates of non-STEM programmes an opportunity to earn a Certificate / Diploma in Information Technology through the UGC. Accordingly, it is recommended to provide a two-year study programme, commencing from the first year second semester, in Information Technology, in addition to the existing study courses. This course is expected to take approximately 08-10 hours of direct contact either in classrooms or computer labs each week of each semester and receive the diploma before the completion of the third year of study. The proposed structure of the programme is given in Appendix 9. A few unique features of this programme are highlighted below.
    - All non-STEM students to be given email address to train them to use electronic communication and access to IT resources at the time of registration. Online collaboration/training will be provided to improve their awareness of IT/Online facilities. For example, Microsoft Office 365, Google Education Suit and other products and services will be used to establish the learning and training environment.
    - Courses of non-STEM degrees will be enhanced to deliver them using IT/Online facilities to improve the IT skills/experience of these students.
    - The blended/online learning will be promoted to deliver all courses in non-STEM faculties with the help of experts/experienced academic.
    - IT/Online facilities of LMS and other software/system will be used to enhance the assessment/examination process of non-STEM courses considering both formative and summative assessments.
    - Academic and support staff will be given training to use different e-Assessment methodologies that include automated assessments. For example, the development of question bank for a course with different types and level of evaluation and how to create quizzes with different questions including MCQs.
    - Students will be guided to earn Certificates/Diplomas by successfully completing courses offered by local and international organizations.
    - Online validation and verification of certificates and achievement will be established using e-Certificates with QR codes, online certified batches etc.
    - Local industry and professional organizations will be invited to offer online/blended courses to non-STEM students and participate as visiting resource persons for internal courses of degree programmes.
    - University of Colombo School of Computing will develop system for online assessment/certification system for IT and English under the guidance of UGC and it will be handed over to other universities to use them for formative and summative assessments.
- Strengthen the IT infrastructure of all non-STEM Faculties enabling students to experience state of the art facilities. The computing resources currently available at the faculties are inadequate for conducting of this programme. See details in Appendix 9.
- Establish IT Service Units/Departments in all non-STEM Faculties. The human resource requirements for this purpose are also given in Appendix 9.

Goal 7: Establish a Virtual University to increase Access for Higher Education

Covid-19 pandemic has on one hand forced the world towards social distancing and on the other hand enhanced engagement of individuals with online platforms for education, work, shopping, and other activities. Focusing on the positive aspect of this scenario, an opportunity to implement the "Virtual" approach to education, which ultimately enables quantum increments of the student intake as opposed to incremental increases to address the supply demand gap is

being proposed. However, it is important that this virtual approach need to be planned and guided in a way that it will not affect the quality of the system and related methods in providing education. Integrated multi-disciplinary programmes are considered as the best approach when it comes to virtual universities. Multi-disciplinary approach at present shows an immense growth because of its success in developing the student with wide understanding of the related disciplines along with a major discipline, rather than studying only one discipline as in the conventional degree programmes. As this multi-disciplinary approach integrates several disciplines into one, resources available at present in the country can be utilized if these disciplines can be firmly interconnected to facilitate the multi-disciplinary degree programme. Following are some recommendations to realize this goal.

- Establish a virtual university under the UGC but with the involvement of existing universities in a consortium/partner model as practiced in several countries.
- Do away with the traditional model of departments and Faculties, by having minimal permanent academic staff, drawing resources from partner institutes in visiting capacity.
- Establish Board of Studies for major study areas with academics from partner institutes.
- Offer course modules developed by Course Teams and award credit certificates for each module while complying with SLQF requirements when developing course modules and ratify the University and its courses / programmes by QAAC.
- Facilitate flexible offering of modules and earning required credits, on the principle of flexibility of entry and exit levels and qualifications.
- Allow students to freely offer any course module of choice, with no pre-requisites, without the requirement to register for any set programme, allowing students to design limitless multi-disciplinary programmes according to their requirements, breaking the rigid streams as currently practiced.
- Allow credit transfers and exemptions for courses offered by other recognized course providers within and outside the country.
- Provide the most cost effective and student-centred learning, employing blended learning techniques and offering all courses virtually, with supervision at pre-identified stages.
- Pool and share the best human resources both within and overseas to deliver the programmes and optimally use the existing infrastructure in the state (or non-state) HEIs during evenings, weekends, or free times at different locations for practical sessions giving the real on-campus experience.
- Support students to acquire required computing devices to engage with courses of Virtual University. Students are also given the opportunity to attend virtual classes in education centres situated in major cities of Sri Lanka
- Facilitate industrial training or a foreign exchange programme to enhance international exposure of the students.

The proposed approach reduces major problems such as infrastructure facility development, accommodation facilities development, and wastage of time by students and lodging and travel costs. It is cost effective for the state as it reduces the cost related to infrastructure, road traffic, public transportation, electricity. It is also capable of balancing the demand and supply in higher education. The cost of higher education is dramatically reduced by this method yet maintaining the quality standards rather than just increasing the student intake with the present system in the state higher education. The student is provided with approximately 30% experience in a traditional university-based study environment, 30% experience in related institute where training is available providing business opportunities and 40% homebased learning experience which ultimately achieves the “HYBRID” concept. This model allows anyone the choice to follow higher standard material or fundamentals at his/her will under a type of

atmosphere of his/her choice. Recorded material could be studied at will until one could comprehend, and limitless flexibilities are provided. Transparency and accountability of the delivery, peer observation, student (or for that matter social) feedback on the overall conduct, and quality assurance could be by default or inherent.

Goal 8: Expand the Non-state Sector of Higher Education

In the last few years, the non-state higher education sector in Sri Lanka has come a long way in providing many opportunities for Sri Lankan students to pursue their higher education dreams in Sri Lanka itself. However, as this sector does not have proper legislative back up and monitoring systems its growth and credibility has come into question at various quarters. Further, with the advent of Covid-19 pandemic, the Government of Sri Lanka's vision of creating more opportunities for students to follow higher studies within the country has become crucial and challenging. In this respect one of the main areas of focus should be expanding the non-state sector higher education with appropriate legislative support and monitoring and accountability structure. Following are some of the recommendations to implement this plan.

- Remove existing legislative barriers to facilitate private sector investment to establish non-state and public-private partnership universities by formulating proper legal regulations and oversight mechanism to attract local and foreign students to acquire/retain foreign exchange in the country. The existing rules and regulations do not allow expansion of higher education opportunities in Sri Lanka. For example, presently foreign universities are established only as BOI companies. However, in countries like Malaysia and Vietnam, where private sector universities are expanding rapidly due to appropriate legislations that allow these institutes to play an important role in the higher education sector. On the other hand, legislation will also allow the UGC to ensure quality and affordability of the study programmes offered by such universities.
- Regulate and monitor operational aspects, standards and quality of all study programmes offered by non-state HEIs through a new regulatory body as suggested in Goal 2.
- Create opportunities for students who have been studying overseas and returned to continue their higher education in Sri Lanka within a safer environment.
- Transform delivery of academic programmes on to an online mode providing students with access to all learning resources, learner support, administration support and tools on virtual platforms to be accessed while being at safer, comfortable environment.
- Provide assistance to non-state HEIs to improve efficiency and effectivity of their LMS platforms and to train their staff on on-line teaching, learning and assessment systems to deliver better service to their student population.
- Encourage non-state HEIs to develop and introduce more demanding new degree programmes to absorb more students and attract non-STEM students.
- Diversify strategies to offer options for students who have returned from their universities overseas and are midway into their undergraduate programmes, students who were planning to go overseas for university education and all other students who want to follow recognized degree programmes. These strategies include:
    - Transfer earned credits and let the student complete the local degree programme with the credit exemptions given.
    - Allow students to complete part of the programme locally and complete the balance at overseas partner institute, so that the student will receive the degree completion status from the latter institute.

- Allow students to complete half of the programme (2 years) locally and complete the balance (2 years) at the overseas partner institute so that student will receive degrees from both the local and overseas institutes.
- Allow students to study locally for a certain identified period or a defined semester and complete a pre-defined number of credits, so that they can go back to continue the programme at the principal institute.

Along with the existing relationships non-state HEIs currently have, they should negotiate workable options as above facilitating students more opportunities to complete their higher education within Sri Lanka while maintaining the necessary standards and quality requirements.

Goal 9: Promote Research and Development, Innovation and Technology Transfer

The post-industrial knowledge economy of today clearly displays the close correlation among economic growth, innovation, and indigenous research capacity. University-based research has been the most effective driver of such economically relevant innovations. As a result, leveraging the public investment in universities to stimulate innovative research and development (R&D) is now a critical need for a country to remain competitive in the global arena. Most high-ranking Asian universities have transformed themselves from teaching universities to research universities in keeping with this global trend. Sri Lanka needs a paradigm shift to make research and innovation core components of undergraduate and postgraduate education, to produce individuals with both a creative vision for innovation as well as sufficient intellectual breadth and depth to realize that vision. Sri Lanka requires innovative R&D contributions to re-stabilize the economy, to ensure national security and for sustainable development in strategically important areas. However, a strategy is about capturing opportunities arising in a dynamic world, as scientific opportunities cannot always be foreseen. In this respect following strategies are recommended to promote R&D, Innovation and Technology Transfer within Sri Lankan HEIs.

- Devise flexible mechanism to respond to novel ideas with solid potential and new funding opportunities for research. For example, Covid-19 pandemic has created an unprecedented window of opportunity for research in as-yet unexplored subject matters.
- Set up mechanisms in identified universities to work on basic and applied research for knowledge creation and dissemination, so that through collaborations with industry, this knowledge can be effectively used for intellectual property generation, and knowledge/ technology transfer for commercialization.
- Formulate procedures to attract global talent, to build a highly qualified and skilled talent pool in the country.
- Introduce higher educational reforms aimed at establishing the value chain of integrated, interdisciplinary, and multidisciplinary approaches that drive academic and research excellence, which can translate into innovative products and services in Sri Lanka.
- Analyse how geographic, cultural, and socio-economic factors can influence university-industry collaborations so that a model best-fitted to Sri Lankan conditions can be adopted without simply emulating the existing collaboration mechanisms in other countries.
- Promote innovation collaborations between universities and industry as a mutually beneficial and profitable exercise for all stakeholders and include the creation of intellectual property and employment opportunities as well as engage in capacity-building.

- Introduce a multifaceted framework of scientific, economic, social, and organizational elements, within the HEI research agenda, that leads to pragmatic and practical solutions that can facilitate the development and diffusion of useful innovations and technologies.
- Adopt the innovation ecosystems approach, which has been successfully implemented in many R&D driven economies, to support the transformation of Sri Lankan universities into R&D driven innovation centres. An innovation ecosystem comprises a research friendly-outlook and culture, facilitatory legal and regulatory frameworks, availability of financial and human capital as well as infrastructure, and, supportive end-user markets, all of which act together to accelerate innovation. Considering the entire innovation system as a whole, bearing in mind the collaborative and interdependent nature of the innovative process, can help identify the best ways to stimulate and nurture productive relationships in sectors where Sri Lanka can create a niche with competitive advantages.
- Identify and prioritize key research areas that are critically necessary to restructure the economy, and support the post Covid-19 recovery process, focusing on, for example, health, nutrition, food security, import substitution and promoting exports through technological innovations; novel areas such as online functions, eco-friendly work, improved in-country production, transformation of natural energy sources such as solar/wind/tidal energies should also be explored. Universities should be encouraged to play a central role in the formulation of evidence-based national policies.
- Create research and innovation centres within universities with a global outlook, conforming to the highest standards and carrying out cutting-edge research with a global purview, so that these institutions and their research yield remain globally competitive.
- Liaise actively with reputed R&D laboratories, science agencies and business enterprises to add further value to university, industry, and national development.
- Recognize that the key components for this transformation need to be viewed as paradigm shift in strategy: to increase resources through investment, spot and harness talent, recruit and retain the best of researchers and make essential structural changes.
- Establish quality research centres of excellence and raise funds for research through collaboration and develop capacity to compete for international grants and enhance research funding through endowments.
- Establish separate research grants development, support, and management department at the university level, especially to help secure more international research grants.
- Develop more research based postgraduate programmes around large scale research projects leading to implementation for meaningful impact.
- Emphasize on research impacts to be at national, regional, and international levels.
- Ensure research conducted in universities benefit knowledge, society, and the economy.
- Formulate necessary legislative arrangements within the University Act to address the existing gaps to remove barriers and facilitate R&D leading to intellectual property, innovation, and commercialization.

Therefore, it is apparent that research for knowledge generation in HEIs of Sri Lanka needs strengthening through a paradigm shift in its entire approach. Further, research and development must shift focus from publication for academic promotions alone towards application and commercialization.

Goal 10: Ensure Quality Assurance in Higher Education

The concept of quality assurance was introduced to Sri Lankan state university system about two decades ago. The Quality Assurance and Accreditation Council (QAAC) was established under the UGC with support from IRQUE World Bank project of the MoHE. Much of the work of the QAAC focused on creating awareness of the benefits of quality assurance and familiarity with the concept, as well as to verifying compliance with minimum standards. Following the publication of the 'Quality Assurance Handbook for Sri Lankan Universities' by the CVCD and the UGC in 2002, the first cycle of Institutional Reviews and Subject Reviews were conducted from 2004 to 2013. Key reference documents such as Subject Benchmark Statements and Codes of Practice were published by the QAAC during this period. Another key document, the Sri Lanka Qualifications Framework, was first published in 2012 and updated in 2015, with funding from the HETC project. During 2015 and 2016, the Guidance for External Quality Assurance (institutional reviews and programme reviews) was completely rewritten and have been used since 2017. With the commencement of external reviews, Internal Quality Assurance Units were established in every university. Directives from the UGC have helped to strengthen internal quality assurance activities, so that all the 15 state universities have well-established central body led by a Director. These Units work together with cells in each faculty or institute to promote and support internal quality assurance activities and facilitate external reviews.

The QAAC, which was almost entirely funded by the World Bank projects, is now known as the Quality Assurance Council (QAC) of the UGC and is funded directly from the Treasury, as are the second cycle of external reviews, conducted by the QAC during the period 2016 to 2020. As the second cycle of institutional and programme reviews draws to a close and as we plan for a post-Covid-19 future, there is an unparalleled opportunity to examine additional measures that would enable QA activities to further strengthen the quality of education. Some of these issues relate to policy-making and national legislation for the entire higher education sector, while other issues are more specific to the state universities under the UGC. The key aspects are given below.

- Establish an independent QA entity with necessary legal authority to ensure quality and standards of all academic programmes and processes in both state and non-state HEIs and endorse the claims of HEIs that they are adhering to the SLQF for qualifications they award.
- Legalize the Sri Lanka Qualifications Framework (SLQF) revised in 2017 through a Gazette notification declaring it as the national higher education qualification framework to make its compliance compulsory for all state and non-state HEIs offering degree programmes.
- Create a full-time academic position at the level of a Deputy Vice-Chancellor or Dean in the permanent cadre in universities, dedicated to QA activities as the head of QA must be sufficiently empowered to ensure implementation of QA in all Faculties.
- Introduce a synchronized calendar for the state university system as the academic year in the 14 universities that offer conventional undergraduate degree programmes have no regular pattern between universities and within a university and sometimes even within faculties. Many factors contributed to this complex and chaotic situation, including delayed admissions due to changes in the GCE (A/L) syllabi and resultant court actions, disruptions resulting from trade union actions by staff, prolonged class boycotts by students, enforced closure of universities in response to student conflicts, or the national security situation, etc. Realisation of a common academic calendar requires prolonged commitment from many different stakeholders (students, staff, university administration, the UGC, the MoHE and the Treasury), but it will undoubtedly enhance the quality of education offered by state universities, in a myriad of different ways.
- Devise a funding mechanism to ensure a regular five-year cycle of external QA reviews to be conducted by the QAC to ensure better implementation of internal quality assurance mechanisms, which is the goal of External Quality Assurance (EQA).

- Use EQA outcomes and review grades to make funding decisions as EQA processes have now matured to a level that calls for institutionalization of a process.
- Establish a national institute for continuing professional development of staff in HEIs as there is a compelling need for regular training programmes for continuing professional development of all staff: academic, administrative, and non-academic, including training on delivery of online/blended learning, programmes on administration and finance, that address the functions expected of a Head of Department, Dean or Vice-Chancellor.
- Establish and promote collaborative partnerships between local universities and international universities of higher rankings, to ensure Sri Lankan education qualifications are seen and recognized to be of world-class standards.
- Promote universities and HEIs to seek accreditation from international agencies as practiced in disciplines such as Engineering.
- Improve the QA practices of the UGC to international level through agreements to collaborate on quality assurance with foreign agencies such as the International Network of Quality Assurance Agencies in Higher Education (INQAAHE), the Asia Pacific Quality Network (APQN), the National Recognition Information Centre (NARIC) of the United Kingdom and Tertiary Education Quality & Standards Agency (TEQSA) of Australia.
- Digitalize the university information systems and establish management information systems to facilitate access to strategic data for regulatory bodies, quality assurance, accreditation, and international ranking needs, as global university ranking systems access online data for ranking metrics on an annual basis. This is part of the reason why Sri Lankan universities rank poorly on these international ranking systems.

References

Aturupane, Harsha., Millot, Benoit., Wang, Lianqin., Allak, Mohammed., Chandrasiri., Fieldon, John., Mikhail., Laroque., Rawlinson, Ralph and Sonnadara, Upul. (2009), *The Towers of Learning - Performance, Peril and Promise of Higher Education in Sri Lanka*, The World Bank Human Development Unit, South Asia Region, Colombo

Commonwealth of Learning (2019), *Guidelines on Distance Education During Covid–19*, Burnaby

Dundar, Halil., Millot, Benoît., Riboud, Michelle., Shojo, Mari., Aturupane, Harsha., Goyal, Sangeeta Goyal, and Raju, Dhushyanth. (2017), *Sri Lanka Education Sector Assessment: Achievements, Challenges, and Policy Options,* The World Bank, Washington DC

Government of Indonesia, (2015), *National Medium-Term Development Plan (RPJMN)*, Jakarta

Ken Research (2019), *Vietnam E-Learning Market Outlook to 2023*, Gurgaon

Ministry of Education Malaysia, (2013), *Malaysia Education Blueprint 2013-2025*, Putrajaya

Ministry of Education Sri Lanka, (2019), *Sri Lanka STEM Education Strategy*, Colombo

Ministry of Human Resource Development – India (2019), *Free Online Education – SWAYAM*, Available from: https://swayam.gov.in/about

National Education Commission, (2019), *National Policy Proposals on Higher Education*, Nugegoda

Online Education in China (2019), Available from: https://internationaleducation.gov.au/News/Latest-News/Pages/Online-education-in-China.aspx

Open University of Sri Lanka (2019), *Statistical Handbook 2018*, Nugegoda

Trines, Stefan (2018), *Education in India*, World Education News and Reviews, Available from: https://wenr.wes.org/2018/09/education-in-india

United Nations, (2019), *World Population Prospects 2019*, New York

University Grants Commission (2019), *Sri Lanka University Statistics 2018*, Colombo

University of Colombo, (2015), *University Governance, Autonomy and Accountability: Directions for Change*, Colombo

World Bank (2011), *Migration and Remittances Fact Book 2011 [Online]*, Available from: https://siteresources.worldbank.org/ INTLAC/Resources/Factbook2011-Ebook.pdf

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Appendix 1

Overview of Higher Education in Sri Lanka

Sri Lanka has been recently classified as an upper middle-income country by the World Bank. In support of this classification, it has impressive Literacy rate of 98.78% among the Ages 15 to 24 years of the population.

Annual entrance to tertiary level programmes is selected primarily via the GCE (Advanced Level) Examination, where each candidate must sit for three subjects in the chosen study stream. In the year 2017, 253,330 students sat for the examination and 163,160 (64%) obtained the minimum qualification required for admission to the Universities. Out of this figure, 31,415 (19.25%) were absorbed by the UGC and its constituent Universities and HEIs. This figure is by far the highest tertiary intake in the country.

The UGC categorizes students based on their preference and ranking by way of Z-Score in seven distinct streams: viz. Arts, Commerce, Physical Science, Biological Science, Engineering Technology, Biosystem Technology, and Other. Table 1 denotes the figures for 2017/18.

Table 1: Students Qualified from GCE (A/L) for Universities and the number admitted to State Universities, 2017/18 (Source: UGC, 2019)

	Arts	Commerce	Physical Science	Biological Science	*Other	Engineering Technology	Biosystems Technology	Total
No. qualified	68,534	39,265	17,593	25,185	2,111	6,169	4,303	163,160
No. Admitted	9,923	6,179	5,787	6,889	370	1,309	958	31,415
% Admitted	14.48	15.74	32.89	27.35	17.53	21.22	22.26	18.70
% of total admitted	31.59	19.66	18.42	21.93	1.18	4.17	3.05	100.00

*Other refers to odd subject combinations introduced from GCE(A/L) 2011

Out of the students who sit for GCE (A/L) from the Arts stream, the majority enter Arts/ Humanities faculties. Table 2 indicates the student intakes of each of these faculties in the last four years.

Table 2: Undergraduate Student Intake at Arts/Humanities Faculties 2016-2020 (Source: UGC, 2019)

University	**Faculty**	**Student intake in Academic Year**			
		2019/2020	**2018/2019**	**2017/2018**	**2016/2017**
University of Colombo	Faculty of Arts	600	550	550	550
University of Peradeniya	Faculty of Arts	900	900	700	700
University of Sri Jayewardenepura	Faculty of Humanities and Social Sciences	700	700	675	675
University of Kelaniya	Faculty of Humanities / Faculty of Social Sciences	1360	1360	1360	1360
University of Jaffna	Faculty of Arts	605	605	595	575
University of Ruhuna	Faculty of Humanities and Social Sciences	600	350	350	350
Eastern University of Sri Lanka	Faculty of Arts and Culture	625	600	600	600
South Eastern University of Sri Lanka	Faculty of Arts and Culture	300	300	300	300
South Eastern University of Sri Lanka	Faculty of Islamic Studies and Arabic Language	500	450	450	450
Rajarata University of Sri Lanka	Faculty of Humanities and Social Sciences	400	400	400	400
Sabragamuwa University of Sri Lanka	Faculty of Social Sciences and Languages	311	250	250	250
Total		6901	6465	6230	6210

Table 3: Some Useful Statistics on the Non- State Higher Education Sector in Sri Lanka

Category	Approximate Number
Non-state HEIs approved by MOHE/UGC	13*
Students enrolled in approved HEIs	30,000
Students enrolled in other non-state HEIs	30,000
Students presently studying under IFSLS in Non-state HEIs	10,000
Students admitted under IFSLS per year to Non-state HEIs	5,000
Students studying for London, Cambridge, Edexel 'A' Level exams in Private and International Schools	16,000

*There are a lot more HEIs in Sri Lanka for which approval has not being granted

Appendix 2

Members of the Core Group

Following is the list of Higher Education Core Group members

- Senior Prof. Sampath Amarathunga (Chairman), Chairman, University Grants Commission
- Prof. Janitha A Liyanage, Vice Chairperson, University Grants Commission
- Senior Prof. (Ms)Vasanthy Arasaratnam, Commission Member, University Grants Commission, and Senior Professor, Faculty of Medicine, University of Jaffna
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- Prof. M M Najim, Vice Chancellor, South Eastern University
- Dr. B A Karunaratne, Vice Chancellor, Rajarata University
- Prof. J L Ratnasekara, Acting Vice Chancellor, Uva Wellassa University
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- Dr. Dharshana Samaraweera

Appendix 3

Experiences of Online/Distance Education from Selected Countries

World over, distance learning continues to grow, demonstrating that institutions remain committed to expanding programmes that meet the needs of today's students. Distance learning offers flexible, yet rigorous education opportunities that provide individuals with access to the in-demand skills needed to achieve their career goals. In the United States, now nearly 98% of all degree-granting institutions of higher education, are offering distance education courses, primarily online. In 2019, the University of Pennsylvania became the first Ivy League university to offer a totally online bachelor's degree programme. According to United Nations, the global population is to increase by approximately 2 billion by 2050, of which more than 50% will be in Sub-Saharan Africa and another 25% will be in Central and South Asia. Due this increase, it is estimated that the overall number of students in higher education worldwide will triple by 2040 to almost 600million. According to many studies, increasing demand for higher education cannot be addressed by building or expanding new brick and mortar universities and invariably, distance education has to play a crucial role in providing access to education for millions of people in the developing world. In fact, ODL universities in Bangladesh, India, Iran, Pakistan, South Africa, and Turkey alone currently enrol more than 7 million students combined. Many of these mass providers are increasingly going digital. Current trends in Sub-Saharan Africa and South Asia illustrate that online education is gaining traction in these regions despite persistent technological barriers, not because it is a better form of learning, but because it is perceived as the only rational, cost-effective means to widen educational opportunities.

India

India has the third largest higher education system in the world, but it is marked by significant disparities in access to high-quality institutions. Official figures put the current enrolment rate only at about 25%, and the student body is largely dominated by people from urban areas and higher income groups. According to a study, over the past two decades, India has created capacity for 30 million students, by increasing the number of universities, from 190 in 1990 to 903 in 2018, and establishing 18,000 new colleges between 2008 and 2016. Despite this massive expansion, supply is trailing demand and India now realizes that the only way it can meet the educational demands of its citizens is expanding online education, resulting in a significant push towards online education by the Government of India. In 2018, the UGC of India, approved new rules that allow all colleges and universities to offer fully fledged online courses, subject to meeting certain quality criteria. Government of India, to encourage universities to put their courses online launched the SWAYAM (Study Webs of Active Learning for Young Aspiring Minds) programme. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. This is done through an IT platform that hosts all the courses taught in classrooms to be accessed by anyone, anywhere, at any time. All the courses are interactive, prepared by the best teachers in the country, and are available free of cost to residents in India.

Malaysia

Malaysia enacted its first National eLearning Policy, or Dasar e-Pembelajaran Negara (DePAN), in 2011 to provide a framework and direction for the implementation of eLearning in higher education. The second version of DePAN (DePAN 2.0) was released in 2015 in line with the implementation phases of the National Education Blueprint (Higher Education) 2015–2025. DePAN 2.0 has six pillars: Infrastructure and Infostructure, Governance, Online Pedagogies, e-Content, Professional Development and Acculturation. In Malaysia, the Ministry of Education aspires to increase access to and enrolment in tertiary education from 36% to 53% and higher education enrolment to 70% by 2025, thus bringing Malaysia on par with the highest enrolment levels in ASEAN today. The initiatives to spur excellence in higher education in the country is part of the government's agenda. According to one of the ten transformational ideas, outlined in the Malaysia Education Blueprint (MEB) 2015–2025 for higher education is development of globalized online learning, encompassing the use of blended learning, OER and MOOCs. To achieve this, several strategies are listed, including producing four common compulsory MOOCs to be taken by first-year students in 20 state universities.

Indonesia

Indonesia has a set a target to reach a GER of 50% by 2040, from the current value of about 32%, and has undertaken major initiatives to promote Open and Distance Learning and On-line learning. Accordingly, Indonesian Ministry of Research, Technology and Higher Education launched an e-learning system, *Sistem Pembelajaran Daring* (SPADA)with the objective of providing higher learning opportunities to all Indonesians all over the country. Overall, SPADA Indonesia has provided 6,097 online modules, which students, and lecturers all over Indonesia can use. In addition, there are multiple platforms which facilitate school level education. Moving into a digital society is already within the Indonesian government's agenda. On the 2020-2024 National Medium-Term Development Plan (RPJMN), the government highlighted the importance of mainstreaming the agenda of digital transformation to help achieve national development targets. The digital transformation project, listed as one of the country's major projects according to the RPJMN, will receive an estimated Rp 50 trillion.

Vietnam

In Vietnam, the demand for high-quality education is reaching new heights. To promote e-learning within Vietnam, the government invited higher education institutions to participate in a set of centrally funded ICT projects, particularly in e-learning. The purpose of these projects was not only to enable institutions to improve the efficiency of their internal operations, but also in the case of e-learning, to anticipate delivery of education to a broader population of students, both on and off campus. With the Government being more proactive in the recent years for the promotion of e-learning, a drastic increment in growth has been witnessed in the years 2013-2018. Increasing number of internet users, rising government efforts to grow e-learning, adoption of modern technology by the learners, and the growing use of learning management systems by the corporate sector to integrate their process are expected to drive e-learning in Vietnam in the future.

China

In recent decades, China has advanced in economic development and expanded education by developing e-learning through technologies. The development of distance education, including e-learning, has evolved in three stages: correspondence-based education, radio-and TV-based distance education, and e-learning or online education from 1998. The Chinese government has attached great importance to the development of e-learning since its emergence in the 1990s. As a result, China has experienced significant achievements in e-learning development, in terms of infrastructure, resources, number of learners engaged in e-learning, and market growth. Since 2000, the Ministry of Education of China has approved 68 higher education institutions to establish pilot distance education colleges/online and continuing education colleges, including Peking University, Tsinghua University, Renmin University of China, Shanghai Jiaotong University, Fudan University and the Open University of China (OUC). According to the Ministry of Education of China, as of February 2020, the nation has 22 online platforms providing 24,000 free higher-education courses, covering 12 disciplines for undergraduates and 18 at a "higher vocational education level".

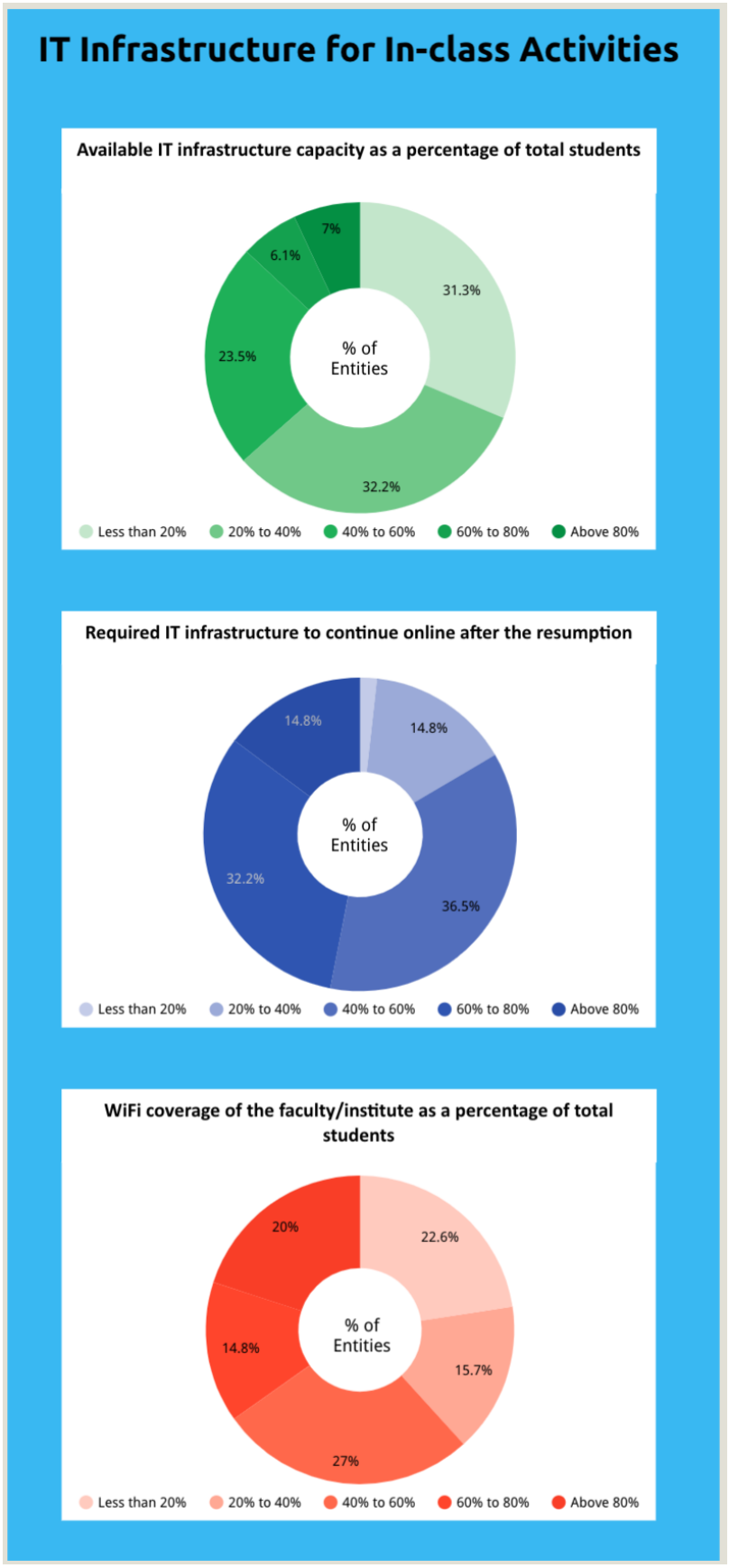
Many countries have initiated national projects where learning resources are shared openly and freely for the citizens to educate themselves. Some of these examples include China Open Resources for Education, SWAYAM of India, Muktopath in Bangladesh, and OER Africa in South Africa.

Appendix 4

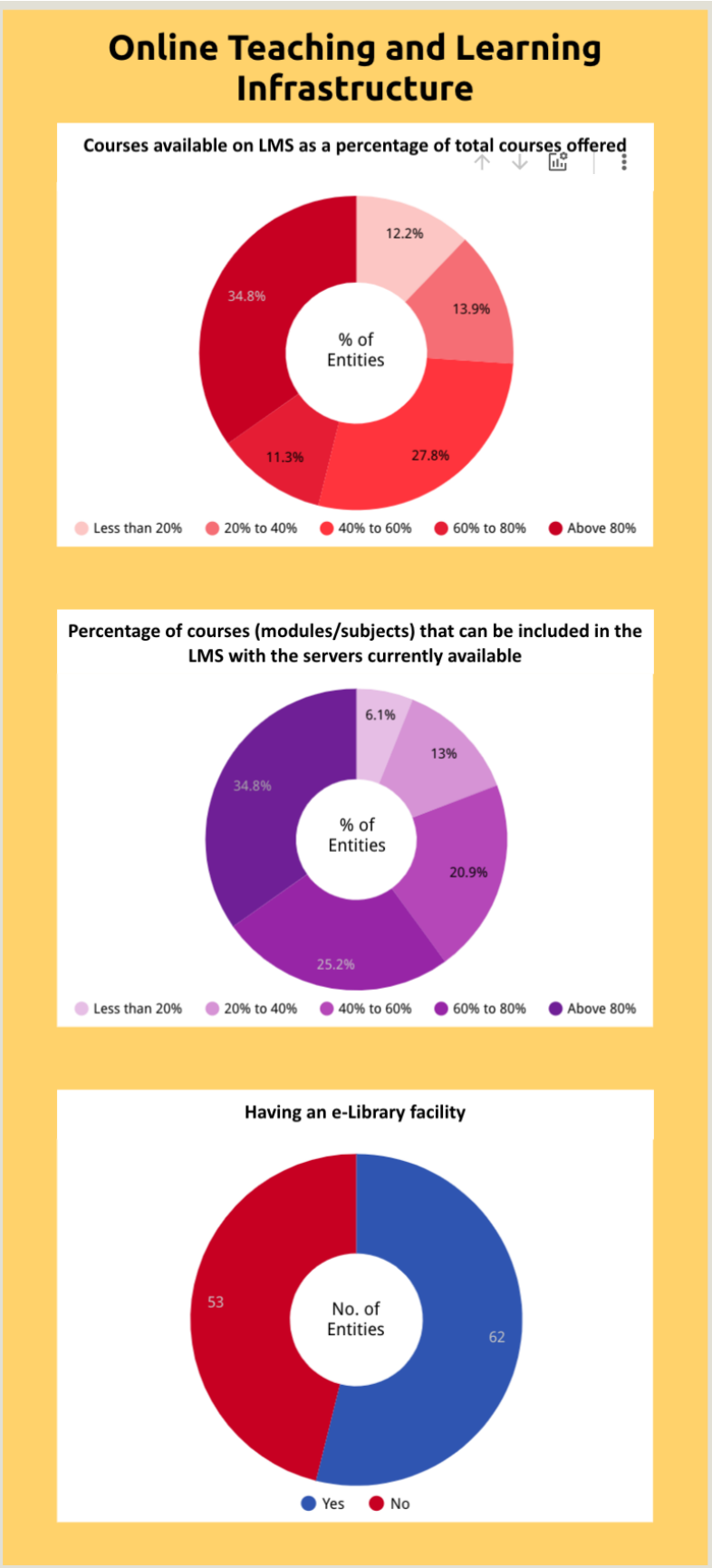
Results of Survey Conducted by LEARN

University / Institute	No. of Students	No. of Academics	No. of courses offered	No. of courses offered in ongoing semester	Whether LMS used
University of Colombo	18,778	655	2,346	1,142	Yes
University of Peradeniya	15,419	941	3,387	1701	Yes
University of Kelaniya	13,548	747	2,404	1,097	Yes
University of Sri Jayewardenepura	16,413	743	3,631	1,594	Yes
University of Jaffna	11,230	527	961	452	Yes
University of Moratuwa	10,196	382	1,458	641	Yes
The Open University of Sri Lanka	30,704	310	821	243	Yes
University of Ruhuna	9,913	575	806	562	Yes
Eastern University of Sri Lanka	6,542	285	1,138	460	Yes
Rajarata University of Sri Lanka	7,011	305	897	424	Yes
Wayamba University of Sri Lanka	6,193	205	766	374	Yes
Sabaragamuwa University of Sri Lanka	3,911	167	1,291	669	Yes
South Eastern University of Sri Lanka	5,851	204	1,044	665	Yes
Uva Wellassa University of Sri Lanka	2,627	172	832	384	Yes
University of the Visual and Performing Arts	2,309	137	823	517	Yes
Institute of Biochemistry, Molecular Biology and Biotechnology	105	10	18	6	Yes
Postgraduate Institute of English	367	5	57	33	Yes
University of Colombo School of Computing	7,000	85	225	80	Yes
Institute of Indigenous Medicine	1,200	80	55	40	Yes
Institute of Agro-Technology and Rural Sciences	900	2	58	48	Yes
Postgraduate Institute of Humanities and Social Sciences	2,649	147	334	144	Yes
Swamy Vipulananda Institute of Aesthetic Studies	840	46	284	148	Yes
Gampaha Wickramarachchi Ayurveda Institute	540	34	138	64	Yes
Institute of Human Resource Advancement	1,021	30	60	22	Yes
Postgraduate Institute of Medicine	4,144	11	135	135	Yes
National Institute of Library and Information Science	65	3	40	13	Yes
Institute of Technology University of Moratuwa	1,280	57	239	84	Yes
Postgraduate Institute of Archaeology	262	9	7	7	No
National Centre for Advanced Studies in Humanities and Social Sciences	120	0	3	3	No
Total	**181,138**	**6,874**	**24,258**	**11,752**	

IT Infrastructure available in the University System for in-class Activities



Online Teaching and Infrastructure available in the University System



Appendix 5

Covid–19 Related Innovations

Since the onset of Covid–19, academics and students of universities and HEIs came out with several inventions and innovations to mitigate the virus spread and to develop affordable emergency health facilities with funding sourced from many sources such as universities, private sector, the UGC, donors and even self-funding. Some of the inventions and innovations which have been reported are listed below. However, there can be several other inventions and innovations unreported both in the state and non-state HEIs.

University of Colombo

1. Design and develop a remote patient monitoring system to observe three vital signs; body temperature, heart rate, and blood oxygen saturation level of inward patients simultaneously developed by the Faculty of Technology.
2. Development of a CPR robot arm to be used by the doctors to provide CPR to a patient without contact with the patient developed by the Faculty of Medicine.
3. Detection of incidence of SARS CoV-2 specific sero-conversion rate and associated level of risk exposures among contacts of COVID-19 done by the Institute of Biochemistry Molecular Biology and Biotechnology (IBMBB).
4. Virtual screening of inhibitors against spike glycoprotein of SARS-CoV-2: A drug re-purposing approach done by IBMBB and Department of Pharmacology of Faculty of Medicine.
5. Development of antimicrobial facemask using active anti-bacterial and anti-viral advanced material by surface modification of non-woven material to anchor viruses by modifying the outer layer surface to achieve the hydrophobicity done by the Faculty of Science.
6. A Wearable Hand Sanitizer Pocket developed by Faculty of Medicine.
7. A study launched to mitigate impact of Covid-19 on quality, availability, price, and affordability of selected essential medicines in Sri Lanka to determine the extent of falsified and counterfeit medicines and assess the impact on medicines availability and prices, immediately after lifting of Covid-19 preventative measures done by Faculty of Medicine.
8. Drone based UAV system in the fight against Covid-19 in Sri Lanka by surveillance of movement restricted/locked down areas, monitoring of quarantined premises, remote monitoring (of body temperature) and voice analysis of undiagnosed potential patients saving time and allowing possibly contagious patients to stay confined, disinfecting contaminated areas with aerial spraying, managing and guiding crowds, delivering medical supplies, etc. done by the School of Computing.
9. Building a mathematical model to develop a real time forecasting for Covid-19 outbreak done by the Faculty of Science.
10. Ayurvedic formula to boost the immunity of public to fight against Covid-19 developed by the Institute of Indigenous Medicine.

University of Peradeniya

11. Medical Ventilator Repair Project sphere headed by the Bio-Medical Engineering group of Department of Electrical and Electronic Engineering supported by the alumni of the Faculty. The team was able to bring the first defective machine to working order within less than 24 hours, repair more than ten dysfunctional ventilators within two weeks. This work has been supported by various parties including the LTL Holdings Pvt., Ltd., Institution of Engineers Sri Lanka, Ceylon Oxygen Pvt., Ltd., Gas World Private Ltd, and several batches of alumni. The first set of twelve restored ventilators certified for their performance conformity with the generous assistance of Bio Med International (Pvt) Ltd. and Technomedics International (Pvt) Ltd, was handed over to the Ministry of Health on April 11, 2020. In two months from the project initiation, more than thirty dysfunctional ventilators have been restored.

12. Building face shields to safeguard medical care front liners from the contact of the virus with the face and removing saliva efficiently. This project is a collective effort by the Departments of Computer Engineering, Industrial and Manufacturing Engineering and the Engineering Design Centre. It has achieved great success within a short period of time, with over 8,000 shields distributed around the country. Around 1,000 face shields were given to the Commander of Army at the Defence Head Quarters.
13. A set of Faculty of Engineering alumni from 2005 batch have worked on a project on providing video conversation system to facilitate contactless communication between patients and healthcare providers and it was donated to the IDH hospital on April 3, 2020.
14. Development of a real-time patient monitoring system to remotely monitor Covid-19 patients. The project which was initiated upon the request of health authorities was successfully installed at the Peradeniya Teaching Hospital on April 24, 2020 and at the Kandy National Hospital on May 18, 2020. Currently, the system can remotely monitor heart rate, SpO_2, ECG, respiratory rate, body temperature, non-invasive blood pressure of the patients in isolated wards.
15. Development of a telepresence mobile robot platform for monitoring Covid-19 non-critical patients for proper management of the disease as each Covid-19 patient needs to be monitored on average three times a day taking on average 15-20 minutes increasing the risk of healthcare providers being exposed. The developed robotic platform can monitor and provide medication for patients and thereby reduce the direct contact. The robot design, development and assembly were carried out by QRBOTS, joint venture of CodeGen Int. Pvt. Ltd. and the Department of Mechanical Engineering, using the technologies that it has been developing over the past five years. The equipment cost was fully funded by the New Zealand Chapter of the Alumni Association of the University. The robot was officially handed over to the Covid-19 ward of the Kandy National Hospital on the May 28, 2020 and will be used at the Covid-19 centre located in Theldeniya.

University of Sri Jayewardenepura

16. "Quarantine Care" App which can be utilized to facilitate self-quarantine process and provide a certificate following the completion of the quarantine period. The main features of this application include, confirming whether the person has remained in the identified location by routine checks, checking and recording the condition of the person creating a patient history, facilitating the person to obtain support from health services when needed and providing a certificate following the successful completion of the self-quarantine period - done by a Student of the Department of Electrical and Electronic Engineering.
17. Development of multi-purpose semi-automated robot for detecting Covid-19 infected patients before entering the common wards and any other place and disinfection by using an alcohol-based disinfectant. Project is in progress - done by a team of students from Department of Electrical and Electronic Engineering, Computer Engineering and Mechanical Engineering.

University of Moratuwa

18. Pulseoximenter - Sri Lanka's first and only Medical Equipment entirely designed and built in Sri Lanka. A joint venture by Premium International (Pvt) Ltd. and Electronics and Telecommunication Engineering Department (PreUM). This equipment is ready for commercialization and awaiting an appointment from HE the President for the launch.
19. Building for CT Scanning facility (Two story 3,400 square feet) at National Infectious Disease Hospital (IDH) at a cost of LKR 30 Mn completed within 50 days. Building includes Consultant Radiologist Room, Record room, Technician Room, Stores, fully furnished Auto Sanitizer unit for CT room, fully furnished lecture room, entire facility is Air Conditioned, complete landscaping with shrine facility. Free of charge labour and technical assistance worth LKR 9 Mn courtesy of Sri Lanka Navy. The rest of the cost was met by 92/93 engineering batch of alumni.
20. Simulation study on fluid flow patterns within the public transport buses providing a scientific evidence of the probability of virus spread within the bus volume. This resulted the Ministry of Transport to change the policy decision and increase the number of passengers to be carried.

21. Design and fabrication of Three-Function Manual Intensive Care Unit (ICU) Bed which complies with IEC 60601-2-52 standard and can be packed into a 1-foot thick packaging (L*W*H = 2,200* 1,090 * 300 mm) to be used in emergencies like epidemics. The bed has a modular ergonomic design for easy assembly, built with fully locally sourced material and facilitates three functions/ adjustments: backrest tilt, knee tilt and bed height, and can be assembled within 20 mins by 2 persons. Design fully complete and fabrication 95%. The project is funded by the Sri Lanka Inventors Commission and the target selling price is less than LKR 100,000/- for bulk orders.
22. Design and develop a Multi-tasking Intelligent Robot platform with a passenger compartment and a robotic manipulator to minimize Covid – 19 virus infection risk. The system can be used to transport medical supplies, collect samples, remote and physical patient monitoring and pick up and place items.
23. Transferable Patient Monitoring Platform introducing a novel transformable platform that converts into a bed, trolley, a wheelchair with a real time patient monitoring system to assist bedridden critical Covid-19 patients.
24. Video and audio assisted Remote Patient Monitoring system to reduce Covid–19 contaminations using an open source remote monitoring platform with both video and audio streaming capabilities at doctor's end. This low cost set up can easily be installed at patient end or mounted on a mobile Robot for the doctor to monitor the patient remotely on the computer or mobile phone.
25. Design and fabrication of foot operated hand washing sink to minimize contamination to be used in the university to assist staff and students where both water supply and liquid soap dispensing are done by dedicated foot pedals.
26. Design and develop an AMBU bag squeezing mechanism (ventilator) to treat early stage Covid–19 patients. The actuation system was designed and developed to automate squeezing of existing ABMU bag with a novel two jaw squeezing mechanism designed and developed by Rapid Prototyping as initial stage - done by the Department of Mechanical Engineering.
27. Design and develop a sensor operated hand washing sink to minimize Covid–19 contaminations to be used in the university to assist staff and students to wash hands – operates automatically by checking presence of persons using IR sensors.
28. There are several other ongoing projects and those in approving stage including ECG, HR, Respiration and SpO_2 wireless patient monitor (self-funded); Ozone generators; Activated carbon filters; Smart phone based pandemic assisting App developments; an online platform to improve the safe, transparent and effective delivery of essential supplies during lockdown and improving the internet coverage in Sri Lanka to effectively conduct of online academic and other work.

University of Jaffna

29. Designing and manufacturing of Face Shield by a team from the Faculty of Engineering together with the consultants at the General Hospital Kilinochchi. The final approved design was used to manufacture 150 face shields and given to the doctors and PHIs for pilot usage through RDHS and Director of GH Kilinochchi. This manufacturing was funded by RDHS Kilinochchi. The team is now prepared to cater for any emergency situation. The cost of this product was 30% of the market price, can be reusable with disinfection, comfortable with air flow design while giving required protection, easy to produce, easy to transfer in a small pack, can quickly be assembled and easily wearable under emergency need.

University of Ruhuna

30. Building of MEDICUS+ Robot for Remote Patient Monitoring and Real Time Communication to assist medical personnel and reduce spread of viruses from patient to doctor and patient to patient during the treatments and other related activities supporting two-way audio-visual communication and to obtain vital measurements in supporting patient diagnosis done by the Department of Electrical and Information Engineering. This was presented to the Teaching Hospital Karapitiya in the first week of May.

31. Ventilator development project with the objective of producing a Ventilator at low cost (LKR 200,000/- to LKR 250,000/-) with shorter production time using open source hardware and Software. Currently testing is carried out in collaboration with IDB done by Department of Mechanical and Manufacturing Engineering.

32. MedBot: Multi-Purpose Remote Controlled Mobile Wheeled Robot to assist treating of Covid-19 patients developed especially focusing on needs of hospitals to disinfect hospitals, deliver medicines, food, and monitor patients and to enforce quarantine restrictions. It is capable to handle activities of clinical care, logistics and reconnaissance carried out collaborating Department of Mechanical and Manufacturing Engineering and Department of Interdisciplinary Studies.

The Open University of Sri Lanka

33. Designing and prototyping of a low-cost portable mechanical ventilator for use in mass pandemic situation. The ventilator delivers breaths by compressing a conventional bag-valve mask (BVM) mechanically, eliminating the need for a human operator. The prototype is driven by a servo motor powered by a 5V DC supply. It has an emergency battery support, an adjustable tidal volume in a defined range, changeable inspiration to expiration time ratio, LCD display screen and user-friendly control interface. The following are planned to be added after first release version - a pressure relief valve to prevent over pressure situations, PEEP capabilities, both manual mode and pre-defined auto mode support, adjusting the number of breaths per minute and a warning alarm.

34. Design and fabrication of foot operated hand washing sink to minimize contamination to be used in the university to assist staff and students where both water supply and liquid soap dispensing are done by dedicated foot pedals.

35. Development of an automatic machine to sterilize hands without touching that can be used anywhere (indoor or outdoor). The process of this sterilizer machine is well developed to clean hands quickly and easily. It is comfortable to the user because of the non-touch mechanism. The main features of the machine include: Non-touching, Maximum 10 L of storage tank, Changeable spray nozzle, 5-7 ml spray dispense for every turn, Easy to refill and operate, Full tank can be used for approximately 1,500 turns, Low power consumption (compressor operates only during refill time), High durability and reliability and has a dimension of 1'x1'x4'

36. Development of an automated security gate with body temperature measuring capabilities which can be used to detect any person with abnormal body temperature. It is suitable to be used in places where people frequent, including universities, business establishments, and government offices. The main features are that when a person enters through this security gate, an IR sensor detects the presence of the person and it will get locked automatically. Temperature measurements can be taken of adults and children through two different sensors kept at different heights. If the body temperature is below a set level the motorize gate automatically opens for the person to enter. If the body temperature is high an alarm will be triggered.

37. Development of a detachable three-layered face mask, consisting of a disposable filter and reusable outer and inner layers. All three panels have adhesive layers to hold them in place. At the end of the day, the filter fabric can be disposed and replaced by another filter fabric.

38. Development of a software tool to predict the spread pattern of the Covid-19 virus using machine learning. The software tool will be developed by training a supervised machine learning algorithm. The software tool is developed such a way that it gives the potential number of people that can be affected and what geographical location they will be located, as soon as a new Covid-19 virus affected patient is found.

39. Development of a solar powered machine for efficient implementation of parachute method in agriculture to mitigate the impacts of Covid-19 such as potential food insecurity within the country.

40. Development of a portable machine to disinfect currency notes and coins. The machine will have a mechanism through which currency (both notes and coins) could be inserted. Then the money will be transferred to a disinfection zone where it would be disinfected by either spraying of chemicals or by exposing to ultraviolet light. Then the notes and coins will be dispensed through another conveyor mechanism.

Eastern University of Sri Lanka

41. Development of a highly antiviral protective and cooling potency mask based on plant fibres by the Department of Siddha Medicine. The mask consists of five layers: Moisturized soap layer, Waterproof layer, HEPA filter layer, Antimicrobial layer and a layer with Sandalwood powder. Soap will be made with tiny holes for air exchange to improve comfort and the sandalwood layer will be the outermost layer.

South Eastern University of Sri Lanka

42. Development of a Mobile controlled robot with two-way communication - developed by a final Year Engineering Student, waiting for on-site testing at the Polonnaruwa Teaching Hospital.

General Sir John Kotelawala Defence University

43. The university has established Covid-19 testing facility and is currently undertaking the testing of patient-samples, not only from its own hospital (UH-KDU) but also from other hospitals of the Ministry of Health.
44. KDU Ventilator-2020 Ver. 1.0 - a pneumatically driven, time-cycled ventilator with user determined volume and flow rate selection capability developed with a matched integration of a compressed air tank, air and oxygen inputs, a set of electrically operated valves and tubes, and a patient circuit of tubing. The user is facilitated with a touch-sensitive screen to input required and appropriate parameters within each mode of operation. The product development cost was LKR 100,000/-.
45. KDU MEDICARE Robot-2020 Ver. 1.0 to take care of COVID-19 patients, feed them and to provide them medicine without human direct contact with them. The functions of the prototype includes: ability to deliver food containers and medicine to 8 patients at same bed level by a single cycle, capability to spray sanitizer as per requirement by robotic hand on top of the system, two way communication for doctor and the patient for real time medical inspections, ability to handle the robot remotely and obstacle detection along the way, inbuilt UV sterilization in all dispensers. The product development cost was LKR 250,000/-.
46. Ventilator Pro KDU Ver. 1.0 - A patient ventilator which is less expensive and takes less time to build using locally sourced materials and components. It allows the control of all vital parameters during ventilation. It is built to minimize aerosol generation during ventilation and is built with a self-sterilization mechanism to reduce machine idling time from one patient to the other. The cost of the project was less than LKR 100,000/-
47. Curec: Doctor Patient Communication Platform which is a mobile app developed by the Faculty of Computing to link the doctors and patients. The computer application addresses the problem of over utilizing healthcare resources and minimize the risk of unnecessary exposure of people to the virus. The cost of the first phase was approximately LKR 125,000/-
48. UV Air Purifier device which is capable of destroying airborne pathogens, such as SARS COV-2 virus, using UV-C light. It can be used to purify air in a theatre or a ward with patients with respiratory diseases even when the people are in the room. Cost of project is approximately LKR 40,000/-
49. Steam Inhaler device designed and produced by the Faculty of Medicine in collaboration with Dankotuwa Porcelain (Pvt) Ltd. that helps inhalation in patients who have nasal congestion, runny nose, 'sinus' type headaches, intractable cough and respiratory related issues and therefore considered beneficial for patients infected with SARS-CoV-2. More than 1,000 units of the device have already been distributed to a number of hospitals under Ministry of Health, including the IDH, as well as military hospitals, for use during the COVID pandemic.
50. "MEDBED Ver 1.0" Intensive Care Unit Bed developed by students and Lecturers of Department of Mechanical Engineering with lesser cost compared to the present local market. The bed is capable of basic five motions, which is with normal ICU bed and newly introduced lateral bed movement, which enables to transfer a patient from a bed and to another bed for the first time in Sri Lanka.

Appendix 6

Summary of the PCR testing in the university system

University	Faculty	Capacity tests per day	Machines Given to the Other Places	Remarks
University of Colombo	Medicine	200	1 machine to Ragama hospital	Most machines donated by German Government
	Science	700		
University of Sri Jayewardenepura	Medical Sciences	350		Dedicated lab with 19 personnel. Experts from Harvard, Cambridge, and Oxford universities synchronous to find the type of virus in Sri Lanka.
University of Kelaniya	Science	150		
University of Peradeniya	Medicine		1 machine to Batticaloa Hospital	
	Science			
	Agriculture			
University of Jaffna	Medicine	150		Working with the Jaffna Hospital
Sabaragamuwa University of Sri Lanka	Medicine	2 machines	2 machines to Rathnapura hospital	

University	Hostels given as quarantine centres
University of Colombo	2 hostels
University of Sri Jayewardenepura	2 hostels
University of Moratuwa	1 hostel
University of Ruhuna	1 hostel
University of Kelaniya	1 hostel
South Eastern University of Sri Lanka	2 hostels

Appendix 7

Pre-University English Course

In order to strengthen the university undergraduates with the required English language skills to undertake their higher studies at the university with confidence, a pre-university online/distance English language teaching programme is proposed. These prospective undergraduates can fully attend to their English language requirement during the period of waiting between their university selection and university enrolment. The focus of the programme will be developing the communicative competence of the learner in all areas of language skills: listening, speaking, reading, writing, and grammar. Overall, the programme will be a learner-centred, outcome based and conducted as an online/distance teaching/learning programme.

Target Group:

Students who are awaiting university registration.

Main objective:

To develop English language proficiency of the learner in all language skills such as listening, speaking, reading, writing and grammar to prepare him/her for university education.

Programme Learning Outcomes:

At the end of the course, the learners should be able to,

a. Speak in English to effectively communicate in all situations where English is necessary.
b. Use reading skills and sufficient vocabulary to read and understand different texts in English.
c. Write in English using different sentence structures and a considerable range of vocabulary suitable for an academic setting or in a work situation.
d. Demonstrate effective listening skills in all communicative contexts.

Tentative time of commencement:

August 2020

Scope and Procedure:

The entire course will be delivered online/distance mode with techniques such as slideshows, videos, video/audio conferencing and online assessments. This method will be best suitable considering the present Covid-19 situation, as it can be made open and accessible to a wide group of participants and facilitates flexible learning in terms of time, location, and pace.

Two full-time Consultants will be appointed by the UGC for overall development, implementation, supervision, administration and monitoring of the entire programme. An initial duration of 6 months will be considered adequate.

A Task Force will be set up for planning and implementation of the programme. This will consist of the two consultants, a team of Heads/nominees from the Departments of English Language Teaching (DELT) of national universities and 2 UGC representatives. The task force will directly report to the Commission of the UGC.

The Task Force will be responsible for syllabus planning, identification of suitable modes of delivery and assessment for various components of the syllabus, work with the consultants to develop complete specification of the programme (product), planning and implementation of assessments of students, be in constant readiness to answer/respond to students' queries related to the e-learning materials, giving clarifications, supplementing students' work through guidance and advice, deliver necessary components

of the syllabus on interactive mode and marking of students' assessments (when online answers are not provided).

The syllabuses will cater to two groups – a basic group of learners and an intermediate group. Accordingly, two sets of online materials will be prepared, and students can progress from one to the other or select materials from any one group.

Students are free to select materials from either group (basic/intermediate) and complete them at their own pace. Continuous monitoring will be done to ensure the enrolment of students for the programme. Participation will be made compulsory for all the students. A certificate of completion will be issued at the end of successful completion of the programme.

The Pre-University English programme (product) will be developed by an external team to the satisfaction of the UGC and the Task Force. The product developer will be responsible to develop the entire online/e-learning material package for the given syllabus including exercises/activities, in user friendly, learner centred format. Product development team will be selected among the universities through a bidding process.

Proposed Budget:

No	Item	Unit Cost in LKR	No of Units	Total in LKR
1	Payment for product developer (online material, programme implementation, preparation of online assessment, online progress monitoring and troubleshooting)	10,000,000.00		10,000,000.00
2	Consultant fee	300,000.00 (per month)	2 (for 6 months)	3,600,000.00
3	Task force member fee	100,000.00 (per month)	For 3 months for 06 members and 6 months for 3 members	2,700,000.00
4	Testing fees (in course)	500,000.00		500,000.00
5	Certificate costs	100.00	for 31,330 students	3,133,000.00
6	Infrastructure/equipment upgrading cost	500,000.00		500,000.00
7	Contingencies/miscellaneous	1,000,000.00		1,000,000.00
	Total			**21,433,000.00**

Appendix 8

Expanding the Open University of Sri Lanka

The GOSL officially recognized Distance Education as a major mode of education by establishing the Open University of Sri Lanka (OUSL) as an exclusively Open and Distance Learning higher educational institute in the country in 1980. As the OUSL promotes lifelong learning, there is no strict admission criteria other than being over 18 years of age and the entry point to the university will be decided by the qualifications of the applicant. Further, as an institution that practices ODL methodology, the OUSL heavily depends on printed and electronic lesson material augmented using modern technologies through Centre for National Online Distance Education Service (C-NODES) with limited face to face sessions, called 'day schools' and laboratory classes in science based programmes. As mentioned in the main document it is proposed to increase the student population at OUSL from the current value of 40,000 to 100,000 over a period of five years. The strategy proposed here requires a rapid development of Regional and Study centres providing more infrastructure facilities and human resources. The proposed fund requirement is only an estimated figure. It is also important that urgent action need to be taken to make sure sufficient human resources are made available at the time of accommodating the additional intake of students.

The OUSL currently has six Faculties, (Humanities and Social Sciences, Education, Natural Sciences, Engineering Technology, Health Sciences and Management Studies). These six faculties through their academic departments offer 75 educational programmes in study areas of Engineering, Natural Sciences, Industrial Studies in Agriculture/Textiles/ Apparel/Fashion, Nursing, Medical Laboratory Sciences, Psychology, Pharmacy, Social Sciences, English Language, Law, Library Sciences, Management, and Education leading to degrees, diplomas and certificates. In addition, the university offers several short courses, addressing the needs in the regions. Foundation courses in Science and Social Science are also offered to provide an avenue for those who do not have the requisite GCE Advanced Level qualifications for entry to degree programmes. Furthermore, there are opportunities to register for programmes leading to research degrees such as MPhil and PhD. All academic programmes are carefully designed so that they are nationally relevant and conform to the guidelines laid down in Sri Lanka Qualification Framework (SLQF). A hallmark of a quality ODL programme is the flexibility in time, in location and the choice of courses given to the learner in completing a study programme with adequate learner support. Moreover, OUSL recognizes relevant prior qualifications of students so that they will get exemptions from certain courses in a programme, thus allowing lateral entry to a programme of study. OUSL with flexible learning options is considered as an ideal learning environment for students who are employed or otherwise busy owing to family commitments. As the students from varying backgrounds are expected to join the OUSL, the university understands well the necessity to widen the range of programmes it offers ensuring employability and ability to contribute towards national development.

In the distance education model followed by the OUSL, the institute is responsible for the two essential aspects of education: teaching and learning, and learner support. The OUSL has many unique features that are not found in any other university in the country. These include: possibility to study while employed thus providing opportunities for lifelong learning and career advancement, possibility to study at one's own pace, non-requirement of prior qualification for entry at Foundation level enabling anyone above 18 years to pursue higher studies, recognition of prior qualifications through credit exemptions and credit transfers, multiple entry and exit levels thus providing ladders of opportunities, and flexibility in curriculum requiring only a minimum 50% of credit requirement to be offered at the OUSL.

The proposal envisages total additional intake of 60,000 students over the period of five years covering 2021 to 2025. The proposed plan for additional intake is given in Table 1 below.

Resources required for the additional intake of students are twofold: Human resources and Physical resources. Human resources required (academic and non-academic staff) have been summarized in Table 2. Please note that the cadre requested here is much lower than that is prescribed by UGC Circular No: 4/2019, where for 60,000 students more than 1,000 academics is the norm.

Physical resources are mainly required for the improvement of Regional and Study Centres. For the convenience of estimating the infrastructure, several basic units have been identified. The composition of these basic units is given in Table 3 and Table 4 gives the number of such basic units that would be required in various regions, in addition to the existing facilities.

Table 1: A summary of planned **additional** intake of students **(2021 – 2025)**

Province	OUSL Centres	2021	2022	2023	2024	2025	Total
Western	Colombo, Gampaha, Kalutara	2,100	2,500	3,000	3,500	4,200	**15,300**
Central	Kandy, Hatton, Matale	1,100	1,300	1,600	2,000	2,500	**8,500**
Southern	Matara, Galle, Ambalangoda, Ambalantota	800	1000	1,200	1,500	2,000	**6,500**
Northern	Jaffna, Kilinochchi, Vavuniya, Mannar, Mullaithivu	800	1000	1,200	1,500	2,000	**6,500**
Eastern	Batticaloa, Trincomallee, Ampara	800	1000	1,200	1,500	2,000	**6,500**
North-Central	Anuradhapura, Polannaruwa	500	700	1,000	1,300	1,800	**5,300**
North-Western	Kurunegala, Puttalam, Kuliyapitiya	300	500	800	1,100	1,500	**4,200**
Uva	Badulla, Bandarawala, Moneragala	300	500	800	1,100	1,500	**4,200**
Sabragamuwa	Ratnapura, Kegalle	200	300	500	800	1,200	**3,000**
Total		**6,900**	**8,800**	**11,300**	**14,300**	**18,700**	**60,000**

Table 2: A Summary of Human resources required for additional student intake

Staff Category	2021	2022	2023	2024	2025	Total
Academic	81	99	50	53	47	330
Administrative	8	0	8	8	0	24
Academic Support	53	61	34	31	15	195
Non-Academic	25	68	40	35	19	187
Total	**167**	**228**	**133**	**127**	**81**	**736**

Table 3: Estimated cost for a Basic Unit Component

Basic unit Component	Capacity (No. of Students)	Area (sq. feet)
Examination Hall (EH)	200	5000
Lecture Rooms (LR)	100	1500
Library including study area (LIB)	200	3000
Cafeteria including study area (CAF)	250	3000
Computer Laboratory (CL)	50	1500

Table 4: Number of basic required in Regional / Study Centres

Province	OUSL Centres	EH	LH	LIB	CAF	CL	ADMIN OFFICE
Western	Colombo, Gampaha, Kalutara	3	20	-	1	-	-
Central	Kandy, Hatton, Matale	2	10	-	-	2	2
Southern	Matara, Galle, Ambalangoda, Ambalantota	4	8	1	1	-	-
Northern	Jaffna, Kilinochchi, Vavuniya Mannar, Mullaithivu	4	8	-	1	3	3
Eastern	Batticaloa, Trincomallee, Ampara	3	8	1	1	1	1
North-Central	Anuradhapura, Polannaruwa	1	6	1	1	-	1
North-Western	Kurunegala, Puttalam, Kuliyapitiya	3	5	1	1	3	2
Uva	Badulla, Bandarawala, Moneragala	3	5	1	1	2	1
Sabragamuwa	Ratnapura, Kegalle	2	4	1	1	2	1
Total		**25**	**74**	**6**	**8**	**13**	**11**
Unit Price		**40**	**15**	**40**	**20**	**30**	**50**
Total Cost		**1,000**	**1,100**	**240**	**160**	**390**	**550**

In addition, science-based programmes will require laboratories. Estimated cost for laboratory development, staff development and cost for any other development has been also been included in the Table 5 which provides information about the total cost estimate.

Table 5: Summary of total estimated cost (excluding staff emoluments)

Resources	Descriptions	Estimated Cost in LKR Mn					
		2020	2021	2022	2023	2024	Total
Infrastructure	Basic unit (Table 4)	1,980	-	1,460	-	-	3,440
	Laboratories	200	100	25	25	25	375
Course development	Print material	25	5	5	5	5	45
	Online material	25	10	10	10	10	65
Staff Development	Short term training	50	50	50	50	50	250
	Long term training	200	200	200	200	200	1,000
Rehabilitation and upgrading of NODES		50	20	20	20	20	90
Others	Development of pre-school buildings at RC, development of SCs	25	25	20	15	10	95
Total		**2,555**	**410**	**1,770**	**325**	**320**	**5,360**

The developed infra-structure at the OUSL will also be made available to other HEIs in the regions. Already the university has a mechanism through which we share our resources with other stakeholders.

Appendix 9

Proposed Certificate / Diploma in Information Technology

Proposed Structure of the Programme

The proposed structure of the programme is presented in Table 1.

Table 1: Proposed Structure of the Diploma in IT programme

Course Title	Total Credits	Credit & Hours			
		Theory		Practical	
		Credit	Hours	Credit	Hours
Office Applications	2			2	100
Information Technology and Systems	4	3	150	1	50
Introduction to Computer Systems	4	3	150	1	50
Free and Open Source Software and Emerging Technologies	2	2	100	0	0
Introduction to Programming	4	3	150	1	50
Application of Multimedia Technologies	1			1	50
Mathematics for Computing	3	3	150	0	0
Fundamentals of Software Engineering	2	2	100	0	0
Introduction to Database Systems	4	3	150	1	50
Web Application Development	4	3	150	1	50
Total	**30**	**22**	**1100**	**8**	**400**

The draft programme structure given above is a model curriculum but a HEI could develop different curriculum model based on its requirement. However, it is very important to consider IEEE/ACM curriculum guidelines for Information Technology studies to identify the core and supporting knowledge areas. SLQF guidelines for Level III should be considered when defining the theory and practical credits of the programme.

Online/Blended learning courses will be established to facilitate students to follow these courses and computer lab and other IT resources will be made available within the faculties for students for practical work/assignment of courses.

Both formative and summative assessments will be carried out during the programme to evaluate the students' performance. Students who will not complete all requirements in the Diploma will be able to obtain certificates based on their performances. Students who will complete all courses successfully will be given the Diploma certificate and an opportunity to register an online IT degree programmes offered by state/non-state universities.

Strengthening of IT resources in Faculties of Humanities/Arts

The course aims to be conducted primarily in a computer lab environment, with a maximum of 50 students per session. Each student group is guaranteed 08 hours of direct and indirect use of this facility per week. Accordingly, with a six-day operational schedule from 8am – 7pm, it would be possible to accommodate 400 students with a single lab of 50 computers.

The current availability of computing resources at the faculties is grossly inadequate for the conducting of this programme. Additionally, since the course content is common across Universities, technical difficulties / limitations of devices can be a hindrance to the proper conduct of the course. Therefore, the project aims to develop new computer labs at the ratio of 1 computer lab for every 400 students. The number of computer labs required is calculated based by considering the number of students current in each Humanities/Arts faculties as given in Table 2.

Table 2: Number of computer labs required in universities

University	Number of Students	Number of Computer Labs planned
University of Colombo	600	2
University of Peradeniya	900	3
University of Sri Jayewardenepura	700	2
University of Kelaniya	1360	3
University of Jaffna	605	2
University of Ruhuna	600	2
Eastern University of Sri Lanka	625	2
South Eastern University of Sri Lanka	800	2
Rajarata University of Sri Lanka	400	1
Sabragamuwa University of Sri Lanka	311	1
	6901	20

Enhancement of Human Resources and Establishment of IT Centres at each Faculty/ University

Previous studies have identified that the lack of a qualified academic and academic support staff as an impediment to conducting IT courses in Humanities/Arts faculties. Hence, it is proposed to establish IT Centres at the faculty/main university level to support all non-STEM students in the faculty/university irrespective of degree programmes to which they have registered. It will optimize the use of IT resources as well as limited human resources.

Human Resource Requirement for Computer Centres for IT Courses

Faculty Category	Number of Lecturers	Number of Instructors	Number of Assistant Network Managers
Large	4	8	2
Medium	3	6	1
Small	2	3	-1

Academic Support – Instructors / Assistant Network Managers

Faculty Category	Student Intake	Number of Universities
Large	>800	2
Medium	401-800	6
Small	<401	2

The allocation of staff is based upon the category classified above.

Estimated Budget

The budget of the programme is presented considered mainly three components namely, programme development, IT infrastructure development and human resource development. Details are given below.

Programme Development: Certificate / Diploma in Information Technology

The detail curriculum and Learning Management System with interactive learning materials will be developed by the University of Colombo School of Computing. LMS will be hosted at the LEARN cloud and it will be initially managed by the UCSC until it is handed over to the respective universities during first three years of the programme. UCSC and LEARN will also facilitate access to online services in collaboration with the technical staff in the respective computer centres. Estimated cost for this initiative will be 40 Million per year.

Strengthening of IT resources in Faculties of Humanities/Arts

The cost of establishing a computer lab belong the computer centre is approximately 10 Million and details are given below.

Item	Quantity	Unit Cost (LKR)	Total Cost (LKR)
Desktop Computers	52	125,000.00	6,500,000.00
Multimedia Projectors	1	125,000.00	125,000.00
Air Conditioners	2	400,000.00	800,000.00
Chairs and Tables	51		800,000.00
UPS	1	15,000.00	15,000.00
Networking inclusive of WI-FI	-		1,000,000.00
Electrical Wiring	-		500,000.00
Rubber Tile Carpeting, Renovation	-		260,000.00
Total			**10,000,000.00**

Note: ***The labs will be set up on existing buildings. Therefore, no capital expenditure will be incurred on constructing buildings***.

Accordingly, the total cost of establishing labs in 10 Universities is approximately 200 million for a period of 5 years and details are given below:

Faculty Category	Number of Universities	Cost per University in LKR	Total cost in LKR
Large	2	30,000,000.00	60,000,000.00
Medium	6	20,000,000.00	120,000,000.00
Small	2	10,000,000.00	20,000,000.00
Total			200,000,000.00

Enhancement of Human Resources and Establishment of IT Centres/Units at each Faculty/ University

This activity will be funded by the UGC via General Treasury creating the required cadre positions and it will not be considered for any additional funds.

Summary Estimate Cost for a period of 5 years.

	Activity	Total Cost in LKR
1.	Introducing a Certificate/Diploma in Information Technology	200,000,000.00
2.	Strengthening of IT resources in Faculties of Humanities / Arts	200,000,000.00
3.	Enhancement of Human Resources and Establishment of IT Departments / Units at each Faculty	-
		400,000,000.00
	Total number of Students that will benefit for 4 Years	6900 x 4
	Per student cost approximately	15,000.00

Estimated Time plan of the Project Implementation

Milestone	Start Date	End Date	Remarks
Project Approval	Before January 2021		Sign off by UGC
Refurbishment of Labs	January 2021	August 2021	Preparation of Tenders
Networking / Wiring	March 2021	August 2021	
Procurement of Computers	February 2021	September 2021	
Recruitment of Human Resources	January 2021	July 2021	
Programme Development and online courses	January 2021	September 2021	
Commencement of Courses (First Batch)	October 2021		The programme will be conducted for 4 batches

Project Impact

The students from non-STEM degree programmes find very difficult to apply suitable job opportunity and the current employability of these students is below 50%. However, there are more opportunities for those graduates who have a good communication skill and IT certificates/diploma. This programme will be an opportunity for all non-STEM students to obtain a recognized IT diploma when they are graduating. This IT qualification is an additional qualification to increase their value of personal profile and it will help them to find better employment.

If a student fails to complete all required courses to obtain IT diploma and he could complete important courses such as office applications to justify ICT competency. The UCTIT programme conducted by the HETC project had the same objective but the proposed programme extends it facilitating students to obtain IT diploma in addition the degree to which they are registered. IT/Online teaching/learning/assessment as well as administration will be used to manage the programme as provide required certificate as soon as possible.

Figure 1 illustrates the sectors in which arts graduates are currently employed. Accordingly, it is in the education sector that most arts graduates are currently occupied (i.e. teaching profession). The ICT sector in Sri Lanka has developed year on year over the past decade, and according to the National IT-BPM Workforce Survey 2019, there is an increased demand for graduates who are competent in information technology. The report predicts that there is a significant demand for graduates who could contribute software development, data analysis, and other IT service sector. Proposed IT Diploma for non-STEM students will provide a good foundation to take up starting jobs and they can also continue their education to earn IT degree/professional qualification. At the same time, the proposed IT diploma helped them to become IT teachers at schools since ICT is a subject both at GCE (O/L) and GCE (A/L).

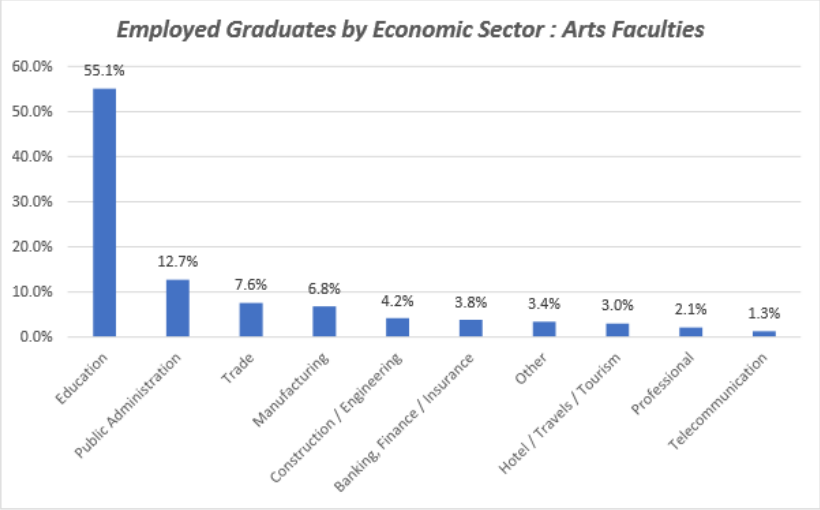


Figure 1- Sectors in which Arts Graduates are currently Employed

Appendix 10

Budget for IT Infrastructure for Online Teaching, Learning and Assessments and for an additional Intake to the Proposed IT Degree Program at OUSL

1. IT Infrastructure for Online Teaching, Learning and Assessments

Phase I: Inter-University Level

Component	Details	Estimated Cost (LKR in millions)	
		Capital (Every 5yr)	Recurrent (Annual)
①	High-Speed Internet Connection Bandwidth	Other Sources	Other Sources
②	LEARN Centralized Cloud Solution (LEARN Media Centre)	625	76.8
③	Third-party Cloud Applications and Services for Teachers and Students	10	102.4
Total (in million rupees)		635	186.2

Phase II: At the University/HEI Level

Component	Details	Estimated Cost (LKR in millions)	
		Capital (Every 5yr)	Recurrent (Annual)
①	Internet/Intranet connectivity within University Premises	300	
②	IT infrastructures of Data Centres/Network Operating Centres (NOC)	200	
③	Wifi for common areas	200	
④	Online Services for different packages	100	
⑤	Staff Training /Development	100	100
Total (in million rupees)		900	100

Phase III: At the Faculty Level

Component ①: IT Resources for e-Learning Centre of the faculty

Component ②: IT Resources for the staff

Component ③: Purchase of special material such as e-Books

Component ④: Staff Training/development

Allocation for the above tasks should depend on the students' and staff numbers in the faculty and the expected outcome based on the KPIs. The maximum allocation for a faculty will be Rs. 10 Million.

Total Allocation for the Phase III will be Rs. 600 Million.

Phase IV: At the End-User Level

Component ①: IT Resources for Students

Special Education Loan will be provided for students to purchase

Component ②: Off-campus Access to University Resources and Internet for Education activities

Special Data Package to access university resources and Internet

Component ③: Online Facilities to access different services for education

Special support will be provided for those who have very low income, and other students will be supported through a particular educational loan facility.

The block allocation for all universities will be Rs. 400 Million

Summary of the Phases and the Budget

Estimated cost for Level 1: -	Rs. 820 Million
Estimated Cost for Level II: -	Rs. 1000 Million
Estimated Cost for Level III: -	Rs. 600 Million
Estimated Cost for Level IV: -	Rs. 400 Million
Contingency :	Rs. 180 Million

Total Estimated Cost of the IT Infrastructure Development: Rs. 3000 Million

2. An additional Intake to the Proposed IT Degree Program at OUSL

Assistance from the government is required to upgrade / expand the facilities at the Open University of Sri Lanka and its regional and Study Center are given in Table 1.

Table 1: Summary of Estimated costs to upgrade / expand infrastructure facilities at the OUSL and its centers.

	Item	Estimated Cost (Rs. M)
1	Upgrade the IT labs and classrooms at OUSL Regional and Study Centers	174.10
2	Upgrade the IT Infrastructure, Internet Connectivity and Wifi facilities at the Main Campus and Centers	385.50
3	Upgrade the IT Infrastructure for the Cloud based LMS to handle the extra intake	9.60
4	Upgrade the CETME facilities for development of content (audio / video) and management of Learner Management System (LMS)	14.00
5	Content Development	20.5
	Total	**603.70**

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PRESIDENTIAL TASK FORCE ON SRI LANKA'S EDUCATION AFFAIRS

REFORMING THE VOCATIONAL EDUCATION SYSTEM TO CATER TO TRENDS IN THE LABOUR MARKET

MAY 2020

CONTENTS

ABBREVIATIONS

CGTTI	Ceylon - German Technical Training Institute
DTET	Department of Technical Education and Training
HNDE	Higher National Diploma in Engineering
LMI	Labour Market Information
NAITA	National Apprenticeship and Industrial Training Authority
NDT	National Diploma in Technology
NEC	National Education Commission
NIBM	National Institute of Business Management
NIE	National Institute of Education
NITESL	National Institute of Technical Education of Sri Lanka
NVQ	National Vocational Qualification
NVQSL	National Vocational Qualifications Systems in Sri Lanka
NYSC	National Youth Services Council
NYSC	National Youth Services Council
QMS	Quality Management System
SLIOP	Sri Lanka Institute of Printing
SSDP	Skill Sector Development Program
TVEC	Tertiary and Vocational Education Commission
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIVOTEC	University of Vocational Technology (UoVT)
VTA	Vocational Training Authority

CHAPTER 01

INTRODUCTION TO TVET AND PRESENT STATUS

1.1 Introduction to Vocational Education

TVET is defined as an "educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic life" (UNESCO, 2015). TVET provides educational opportunity to provide livelihood skills for any person.

The Technical, Vocational Education and Training (TVET) sector in Sri Lanka consists of several public sector training networks (i.e. DTET, NAITA, VTA, NYSC etc.), and a large number of private sector training institutions. The Ministry of Skills Development, Employment and Labour Relations mobilize a major portion of skills education institutions under one roof, while the Ministry of Higher Education, Innovation and Research houses the University of Vocational Technology (UoVT), which legally belongs to the TVET sector according to the UoVT act.

Many such skills education institutions in the state sector (i.e. about 600) together with privately managed skills education centres (i.e. about 700) have been jointly geared to address the emerging skills needs of a high performing economy. New skills education programs are designed by TVEC to enable youth to acquire marketable skills required for higher earning jobs, both locally and overseas.

The Tertiary and Vocational Education Commission (TVEC) was established in 1991 as the apex body in the Technical, Vocational Education and Training (TVET) sector by an act of the parliament and currently under the purview of the Ministry in charge of the subject of Skills development and Vocational Training. Its primary responsibilities are policy formulation, planning, quality assurance, coordination and development of tertiary and vocational education in the country.

The National Education Commission (NEC) has developed a National Policy on TVET in 2018 with the support of the TVEC and all other stakeholders and published after the approval of the Cabinet. A development plan being prepared with the consultation of development stakeholders and TVEC undertakes the implementation of the plan under the directives of the line Ministry.

The Ministry of Skills Development, Employment and Labour Relations provides directives to following institutions under its purview:

- Tertiary and Vocational Education Commission (TVEC)
- Department of Technical Education & Training (DTET)
- National Apprentice and Industrial Training Authority (NAITA)
- Vocational Training Authority (VTA)
- Ceylon–German Technical Training Institute (CGTTI)
- Sri Lanka Institute of Printing (SLIOP)
- Skills Development Fund Limited (SDFL)

These institutions have different and specific mandates in skills development in Sri Lanka under the guidance of the relevant line Ministry. There are about 1300 training delivery institutions in public and private sector regulated by well-established regulatory framework of the Tertiary and Vocational Education Commission (TVEC).

1.2 Entry and Exit Points of the Vocational Education System

The following diagram depicts the entry and exit points of the present education system with rough numbers as depicted in page 1 of the policy document:

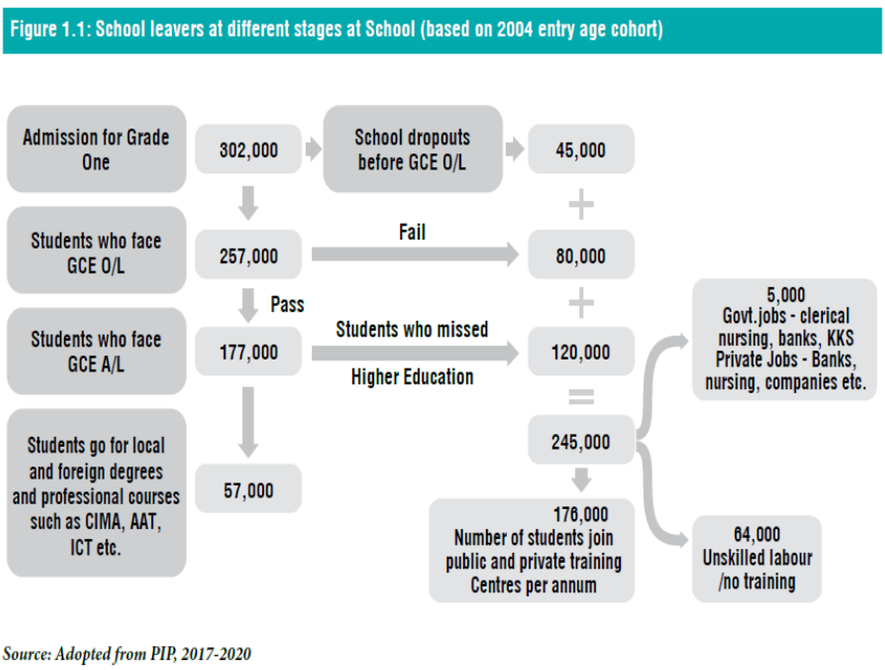

Figure 01: School Leavers at Different Stages at School (based on 2004 entry age cohort)

1.3 Establishment of the NVQF in Sri Lanka

Previous certificates and diplomas those offered by the Public and Private vocational training institutions do not refer to a level of a qualification framework. As such, youths were in puzzle of selecting a quality programme to prosper their future as a carrier path. Similarly, at the recruitment stage, employers faced difficulties in considering which certificates were acceptable and complied with Industry requirements.

The National Vocational Qualifications Framework makes provision for a nationally consistent, technical and vocational education and training in Sri Lanka relevant to economic and social development and is of an international standard. The National Vocational Qualifications of Sri Lanka are based on national competency standards identified by the industry stakeholders. The competency standards include relevant technical and employability competencies.

A broad framework has been developed integrating technical/vocational and higher education and further levels may be added. The framework allows for an interface with secondary education and provides a progression for technical and vocational education qualified personnel to proceed to higher education. Industry and professional bodies participating in the development of the national competency standards are therefore in a position to plan for a smooth progression of qualifications from craft to technician to higher education.

Quality assurance is fundamental to all aspects of the NVQSL; it includes the determination of the national competency standards, training delivery to learners on and off the job, the assessment of competencies of candidates and the

award of qualifications. Technical and vocational qualifications which comply with the national quality requirements are formally recognised through the National Vocational Qualifications of Sri Lanka. The framework is based on national competency standards which form the criteria for accreditation of courses. All other qualifications including foreign qualifications which conform to the requirements of the framework will be aligned with the NVQ system.

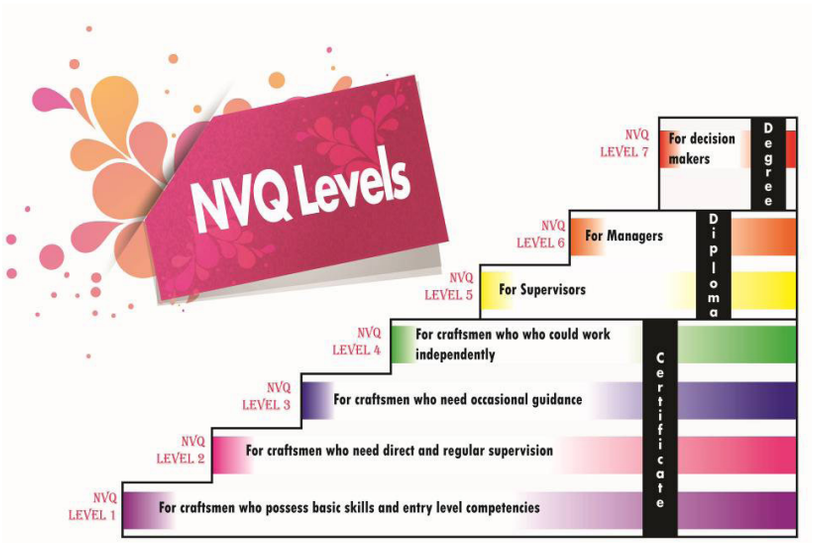

Figure 02- NVQ levels at Certificate, Diploma and Degree Programs

1.4 NVQ Levels with Lateral Entries and Linkages

The NVQSL is developed to assist trainees to join and leave the system at different stages with qualifications at different levels. The qualifications at different levels have been identified to suit employment requirements of the industry. Vertical mobility upwards through the system is straightforward as seamless progression is facilitated. Lateral entry into the system is possible at certain levels for those who have work experience in an appropriate field and assessed to have Recognized Prior Learning (RPL).

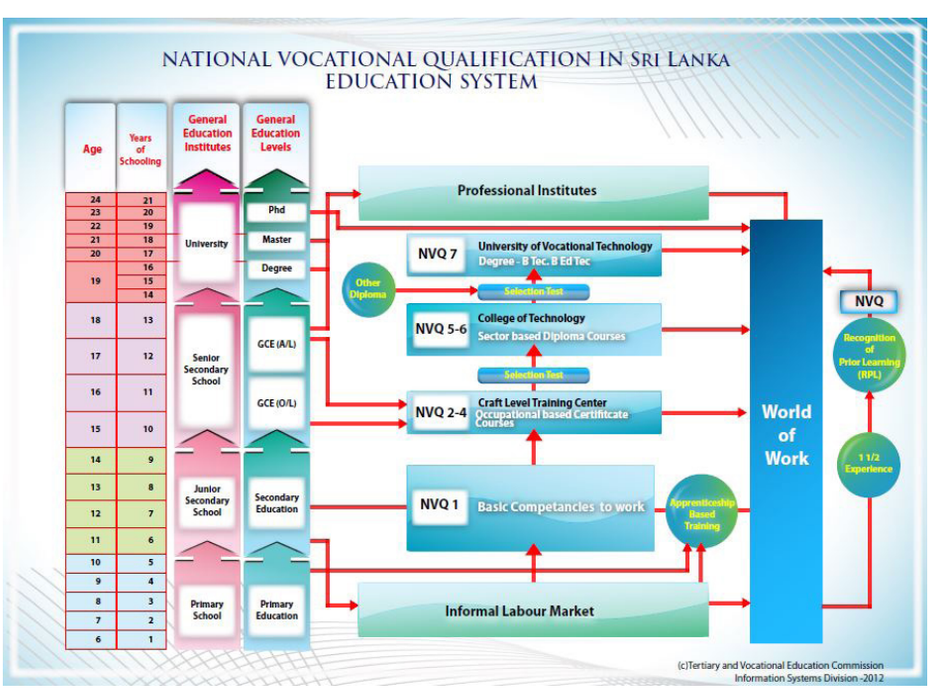

Figure 03: National Vocational Qualification Framework

The above NVQ levels 1 to 7 are defined as depicted in the above table in terms of process complexity, learning demand and the responsibility of such person working in respective occupation. Please see the table in Appendix 1.

Competency Based Training (CBT) includes both training and assessment in accordance with the National Competency Standards (NCS) for different occupations fitting into the National Vocational Qualifications (NVQ) framework levels 1 to 4 (certificate) levels 5 & 6 (Diploma) and level 7 (degree at UoVT). While the UoVT has been established by a separate Act of Parliament, for those from levels 1-6, thorough training is provided by TVEC registered institutes and accredited courses. The UoVT provides entry for NVQ holders at levels 5/6 and also provides a lateral entry for mid-level technical qualification holders such as HNDE, NDT and NDES for upward mobility to obtain a B.Tech degree on successful completion at level 7.

The founding base of the UoVT was to facilitate Technical Teacher Training leading to a B.Ed. (Tech), through a Faculty of Training Technology which was an outcome of the National Institute of Technical Education, Sri Lanka (NITESL), which followed the National Technical Teacher Training Centre (NTTTC) having originated from the Department of Technical Teacher Training of the Katubedda Campus on its establishment as the University of Moratuwa in 1978 by the Universities Act No 16 of 1978.

Since the backbone of any "Training Institutions" are the appropriately well trained Trainers, the UoVT was entrusted with this responsibility of training the personnel for Technical and Vocational Education sector with the cooperation of industry, monitored by TVEC and supported by other training providers both in the state and private sector. A major collaborator should be the Faculty of Education of the OUSL for the modern methodologies in Technical and Vocational Education and the TVEC for the Quality Assurance and monitoring.

a. The provisions in the UoVT Act are essentially for Technical and Vocational Education entry to be different from the Conventional University system and as insisted upon by the relevant Professional bodies should be adequately highlighted to brighten the image of Technical and Vocational Education , such that it is on par with leading universities offering specialisations in technical/technological subject areas such as the Indian Institutes of Technology (IITs) or even the Massachusetts Institute of Technology (MIT).
b. These efforts could enhance the image of Technical and Vocational Education and attract youth to this sector and reduce the excessive demand for conventional systems.

All the above developments in Technical and Vocational Education progressed fairly smoothly with the establishment of the TVEC as the Regulatory Policy making and monitoring Apex body by Act of Parliament, having a NVQ Operational Manual, despite the need to update these documents and implement the recommendations to H.E. the President in the National Policy on TVET specified by the National Education Commission in 2019.

However, deviations from the policies and provisions in the relevant Acts of Parliament, with frequent changes in the Ministry Portfolios and the consequential effects have been detrimental to the consolidation and development of the sector. This is very evident in the incorrect positioning of the UoVT and the Ocean University of Sri Lanka under Ministry of Higher Education along with the conventional Universities with the respective objects of both these being different from the Conventional University system. This has been aggravated due to the lack of interaction between general education, Vocational and Technical Education and Higher education in which the main component is University education. With a single Ministry as an "umbrella body for Education" as was prevalent in the 1970s and even now in many countries such as in India having a single Ministry for Human Resources Development with perhaps "Senior Deputies" for the subsectors thus the "inter-action" can be restored and strengthened. .

Furthermore, whether the policy making "Education Commissions" such as NEC, UGC and TVEC should be under the "Head of State" or under the Ministry in charge of the subject of Policy Planning and not under a line Ministry, is worth the consideration by those in Authority for independent decision making process as nationally is required.

At present according to the existing legislation Degrees can be awarded in Sri Lanka only by Tertiary Education Institutes which (a) established under the Universities Act No 16 of 1978 (as amended) or (b) by Degree awarding institutes as prescribed by the same Universities Act or (c) Universities established under separate respective Acts of Parliament and permitted to the award of degrees.

The UoVT falls under the category (c) above and the Governing Board could resolve to award degrees to those who have successfully completed the NVQ level 7 at the UoVT. However, there is no legal provision to award degrees to any other institute established under the UoVT Act.

Furthermore, the Governing body of any other state or Private Tertiary Education Institute which consider the institute to be deemed fit to award degrees, will have to be considered very cautiously, academically and moreover legally either under provisions of the Universities No 16 of 1978 Act as a degree awarding institute or by enacting a separate Act of Parliament with provision to award degrees.

1.5 Recognition of Prior Learning (RPL) within TVET Framework

Recognition of Prior Learning is a process that recognises a learner's current competencies which may have been achieved through means that include any combination of formal or informal training and education, work experience or general life experience. Recognition of uncertified learning may be combined with any formal certification to enable assessment decisions to be made. The national vocational qualifications system shall recognize prior learning based on national competency standards and determine the extent to which an individual has achieved the required competencies for partial or total completion of a national vocational qualification. NVQSL Provides RPL only up to NVQ level 4.

Recognition of prior learning shall be accessible to anyone with relevant competencies achieved through means mentioned earlier that can be validated against the national competency standards. In the absence of any formal training, the minimum industrial exposure requirement to become eligible for RPL is 18 months for NVQ level 2 and level 3 qualifications and that for level 4 further 24 months after obtaining NVQ level 2 or 3.

Prior learning can be acquired from:

- The workplace.
- Life experience.
- Self-directed study.
- Non-certificated study.
- Formal uncertified learning.
- Informal or undocumented understudy/mentoring schemes.
- In-service training.
- Distance education or open learning.
- Community-based education.
- Overseas education, training or experience.

In future RPL service needs to be online process from application to certificate. Thereby it should focus on user friendly and fast processing capability for improved quality of service

CHAPTER 02

DISTRIBUTION OF RESOURCES IN THE TVET SECTOR

2.1 TVET Institutional Framework

The Technical, Vocational Education and Training (TVET) System of Sri Lanka comprises of few frameworks such as the TVET Institution Framework, Quality Assurance Framework and the National Vocational Qualification Framework. Apart from these frameworks, the labour market information system, career guidance systems, apprenticeship training systems, learning resource development and utilization systems function as supporting systems that are monitored and regulated by the Tertiary and Vocational Education Commission (TVEC) under the purview of Ministry of Skills Development Employment and Labour. Please note that the University of Vocational Technology and Ocean University have also been with the Ministry of Skills Development and Vocational Training until 2020 in order to reach the above objectives of vocational education in the country.

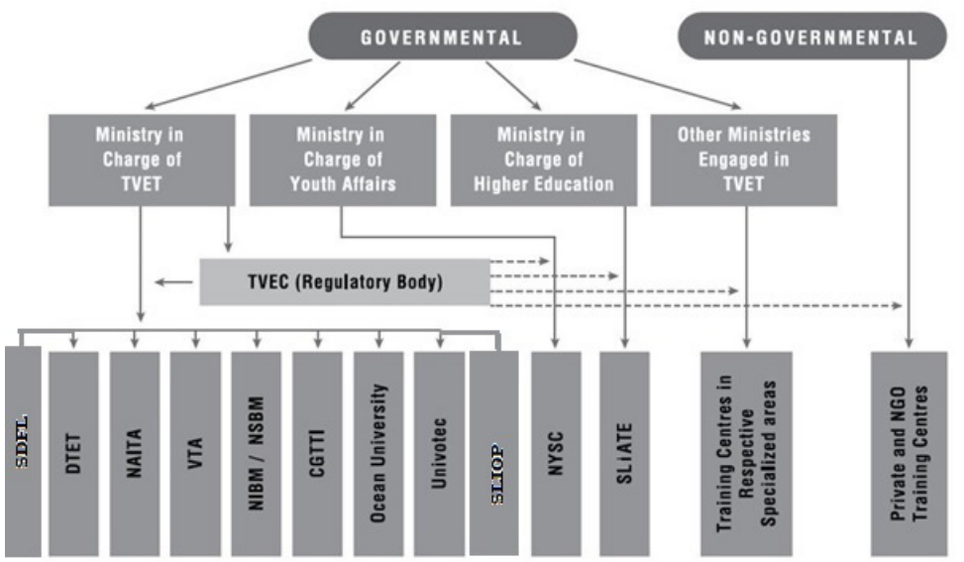

Figure 2.1: TVET Institutional Framework of Sri Lanka

Tertiary and Vocational Education Commission (www.tvec.gov.lk)

The Commission which was established under the provisions of the Tertiary and Vocational Education Parliamentary Act No 20 of 1990 is the apex body in the Technical and Vocational Education and Training (TVET) sector. Its primary responsibility is policy formulation, planning, quality assurance, coordination and development of tertiary and vocational education in the country.

University of Vocational Technology (UoVT) (http://www.univotech.ac.lk)

University of Vocational Technology is the university newly established for the TVET sector in Sri Lanka. The general objective of the Univotec is to provide progressive upward movement to the students in the technical education and vocational training system, based on their aptitudes and abilities, to acquire university education.

The specific objectives of the Univotec are:

- to provide pedagogical and technical training up to degree level for trainers serving in the technical and vocational education sector and industry
- to provide courses of study for middle level technical personnel, with qualifications acceptable for admission to Univotec, up to degree level

- to provide courses of study for those with National Vocational Qualifications to upgrade their competencies and acquire a degree level qualification, and
- to provide extension courses on continuous professional development.

Department of Technical Education and Training (DTET) http://www.techedu.gov.lk

The Department of Technical Education and Training was established in year 1893 and has expanded to 39 Technical Colleges today. There are 09 Technical colleges upgraded to Colleges of Technology (CoTs) in the nine provinces to conduct emerging technology diplomas in the provinces. Most of the courses conducted in DTET are long term certificate and diploma courses in the technical education streams.

National Apprentice and Industrial Training Authority (NAITA) (http://www.naita.slt.lk/)

National Apprentice and Industrial Training Authority was established as the National Apprenticeship Board under the National Apprenticeship Act. No. 49 of 1971 and was renamed under the Tertiary and Vocational Education Act No. 20 of 1990 as the National Apprenticeship and Industrial Training Authority. NAITA was established with the view to provide apprenticeship training to trainees who passed out from various training centers. Industry based training has been successfully conducted and supervised by the NAITA. In addition, there are three National Centers: the Institute of Engineering Technology, the Apprentice Training Institute and the Automobile Engineering Training Institute managed by NAITA.

Vocational Training Authority of Sri Lanka (VTA) http://www.vtasl.gov.lk

The Vocational Training Authority of Sri Lanka (VTASL) was established in 1995 with the view of providing job-oriented training especially to the rural youth in Sri Lanka. The main objective of the Vocational Training Authority of Sri Lanka is to pave the way for youth to acquire skills needed to gain employment, either way, self or foreign and thus lead a contended life and contribute towards the country's economic development.

The VTA offers skills training through a network of 7 National Vocational Training Institutes, 25 District Vocational Training Centres and many Rural Vocational Training Centres. VTA specially focuses on craft level courses in district and rural vocational training centers.

Ceylon-German Technical Training Institute (CGTTI) http://www.cgtti.slt.lk

The Ceylon-German Technical Training Institute (CGTTI) is the foremost institute in Sri Lanka for the training of skilled technicians in the field of Automobile Engineering and allied trades. The institute was originally established in 1959 at the premises of the central workshops of the Transport Board of Sri Lanka at Werahera. This was a result of an agreement made in 1958 between the government of Federal Republic of Germany and Sri Lanka to supply training assistance in the maintenance of bus fleet, which belonged to the Transport Board of Sri Lanka. The Institute was shifted to Moratuwa in 1974. It was originally organized and managed by a German director and his German staff till February 29th, 1976. Then its management was handed over to Sri Lanka.

The Sri Lanka Institute of Printers (SLIOP)

The Sri Lanka Institute of Printers (SLIOP) was established with the objective of improving quality of the printing industry. It offers training on printing technologies and management; and fosters knowledge on new technologies through international cooperation;

Skills Development Fund Limited (SDFL)

Skills Development Fund Limited has been established as a pilot project in 1998 on the recommendation of Presidential Task Force on Technical Education and Vocational Training. Initially, International Labour Organization (ILO) and United Nations Development Programme (UNDP) sponsored towards establishing SDFL. SDFL was established as a self-funded institute and, it was initially contributed with funds from the Employer's Federation of Sri Lanka and another private investor in addition to the Rs. 100 million share of the state. SDFL, which functions under the supervision of the Ministry of Skills Development and Vocational Training, was reregistered as a Limited Liability Company under the Company Ordinance No. 07 of 2007.

Ocean University

The Ocean University was established by the Parliament Act No 31 in 2014. The objective of the University is to conduct academic and professional education and vocational training activities in fisheries, marine and nautical engineering to fulfill and develop the needs of the fisheries and allied sector.

National Institute of Business Management (NIBM)

The National Institute of Business Management (NIBM) with a legacy of over 51 years of service in the business of higher education is focusing on bridging the professional practice gap in the fields of Management, Information Technology, Engineering, Design and Languages. Throughout this journey NIBM has enriched thousands of students by ensuring better career opportunities in both local and foreign job markets. Concurrent innovations, and development efforts coupled with experienced professionals on staff have lead NIBM to differentiate itself from other higher education service providers.

TVEC online information dashboard gives the most updated real time data about the institutions, centers and courses of the TVET system in Sri Lanka. Snapshot as of the May 3rd, 2020 is given below:

TVEC REGISTRATION AND COURSE ACCREDITATION STATISTICS AS AT 2020-05-03

Institute	No. of Institutes	Registration Expired	Registration Valid	Renewal Apps. to be Attended	New Apps.to be Attended	No. Registered Courses	Valid Accredited Courses	Accredit Apps. to be Attended
NAITA	67	25	42	1	0	134	86	0
VTA	251	60	191	16	0	1209	1130	4
DTET	39	5	34	0	0	805	546	21
NYSC	46	12	34	1	0	300	194	2
OTHER GOV	677	390	287	21	37	1061	363	46
OTHER	1724	1018	706	90	178	2763	609	76
TOTAL	2804	1510	1294	129	215	6272	2928	149

2.2 Human Resources in TVET

In order to build capacities of youths and adults of Sri Lanka, state of art TVET sector with modern technologies empowered with suitable and competent staff is a fact of utmost importance. In building with required qualified staff in the TVET sector, continuous staff development programs are necessary. The government's efforts to build the necessary human resources in the TVET sector should be complemented by the resources of internal and external private and NGO sector contributions.

Further the Government is attempting to reduce unemployment and respond to the changing needs of the labour market by combining short- and medium-term strategies. In the short term, the Government is exploring the possibility of expanding local and foreign skilled and semiskilled employment, while in the medium term; high priority is being given to manufacturing-based growth with increased foreign investment. This strategy requires a

highly trained labour force, including technicians and technologists.

Despite the large supply-demand gap, unemployment, especially among educated youth, is high because most school leavers lack the skills required for either wage employment or self-employment. These youth could be employed in industry, or become self-employed, if suitable training programmes are available to provide them with the relevant technical and vocational competencies.

TVET institutions lack trained trainers in both quantity and quality that serve as a barrier to fulfilling its delivery mandate for creating a skilled human resource in the country. Attracting qualified instructors and other staff has been a difficult task within the TVET sector as the government was unable to match industry remuneration and perks. Therefore, staff vacancies could not be filled with suitably qualified staff. This fact mainly affects the quality of the TVET delivery in the country.

TVET sector needs highly skilled human resource as trainers to deliver demand responsive programs. In Sep 2019, there were about 7000 trainers in the system as follows. But

	Male	Female	Total
No of trainers	4273	2433	6,706

In order to maintain highly productive TVET sector, staff training is vital. Staff training could be divided into the following categories:

1. Trainer training for trainers serving in the technical and vocational education sector
2. Technical and skill upgrading training for trainers serving in the technical and vocational education sector
3. Provide various staff development and capacity development programs to TVET managers and other staff
4. To provide extension courses on continuous professional development of the staff

2.3 Teacher Development for Student Centric TVET System

UoVT (Previously Teacher Training College of TVET Sector) (National Technical Teacher Training Centre and thereafter National Institute of Technical Education of Sri Lanka) had been assigned with this task. However, with the transfer of it to the Ministry of Higher Education, an urgent revisit to this task is necessary and the responsibility of the Technical Teacher Training should be of the Faculty of Training Technology of UoVT with the collaboration from the Open University of the Sri Lanka on relevant educational technologies and the TVEC for inputs on policy guideline and most importantly with linkages from private and public training providers for suitable resource persons and also supply of trainee teachers. The physical location for such training could be decided on facilities available and moreover now through online education

CHAPTER 03

KEY GUIDING PRINCIPLES IN THE REFORMING PROCESS

There are six key guiding principles in the reforming process:

1. New proposals have been considered and adapted into new National TVET policy document
2. Vocational education profile – Stakeholders, Institutions, Mechanisms providing access to all
3. Focus on skill development in addition to imparting subject knowledge (21st Century skills) and skills for IR4 (4th Industry Revolution) have been embedded in the relevant chapters of the TVET policy. For e.g. Big data and data visualization for career guidance and trend analysis
4. Appropriate use of new technology including digital/ on-line learning technologies. Policy, development roadmap, quality criteria and plans have been prepared for the development of digital, on-line learning and distance learning
5. Review of previous vocational education reform proposals in Sri Lanka and comparative experience of reforms in selected countries. Extensively considered by various expert panels when developing the new policy
6. Need for an integrated approach across general, vocational and higher education including university education. Highlighted in many forums and need political will for this change.

CHAPTER 04

AVAILABLE TVET POLICY GUIDELINES

Technical and Vocational Education progressed fairly smoothly with the establishment of the TVEC as the Regulatory Policy making and monitoring Apex body by Act of Parliament , having a NVQ Operational Manual, despite the need to update these documents and implement the recommendations to H.E. the President in the National Policy on TVET specified by the National Education Commission in 2019.

Accordingly, the National Policy on TVET was prepared. A number of expert groups were appointed to go into detailed analysis and make necessary policy recommendations. Accordingly, different Policy groups were formed with field experts in preparation of the following chapters in the policy document:

i. Chapter 1 : Increase of Access to TVET
ii. Chapter 2 : Optimal Utilization of Physical, Financial and Human Resources
iii. Chapter 3 : Rationalization of Training Programmes at Regional Level to Minimize Overlaps
iv. Chapter 4 : Relevance and Quality of TVET Programmes
v. Chapter 5 : Interrelation Among Industry, Employers, Employees and TVET
vi. Chapter 6 : Interrelation of TVET with General Education and Higher Education
vii. Chapter 7 : Recruitment and Career Progression of TVET Academic and Administrative Staff
viii. Chapter 8 : Access to TVET for Vulnerable and Disadvantaged People
ix. Chapter 9 : Information Gathering, Dissemination and Career Guidance

However, deviations from the policies and provisions in the relevant Acts of Parliament, with frequent changes in the Ministry Portfolios and the consequential effects have been detrimental to the consolidation and development of the sector.

CHAPTER 05

CHALLENGES, FUTURE OF TVET AND NEED FOR THE CONTINUOUS REFORM PROCESS

5.1 Global and Local Challenges of TVET

Following are the general challenges that all countries face with regard to TVET including Sri Lanka.

1. TVET does not fully respond to the demands of the labour market and the needs of the industry. Many leading TVET providers looking for government funds and industries have very less partnership or funding.
2. TVET does fully align with the priorities of the Government especially its economic policy. TVET, have been part of the education sector for a long time. However, the sector still sees itself as part of social policy not of economic policy and TVET managers are not normally aware of the country's economic priorities.
3. Most developing countries including Sri Lanka put less value to TVET than university or professional education. Parents and the community as a whole look down on TVET and bright students often turn away and TVET was branded as the dumping ground for those whose academic capacity is not up to the requirements of higher learning.
4. Normally TVET is not much influential to political system and therefore resources for TVET are often limited. Universities are politically influential due to connections with political parties and groups who supporting those parties in numerous ways.
5. Quality of the staff of TVET centers low due to political recruitments over the years and low salaries paid to the instructors compared to the industry.
6. Equipment from previous investments are left idle due to the expensive trading supplies, no capacity to repair the imported equipment, and few knowing how to use it. Some of this equipment are already obsolete and fits to old industrial requirements.
7. Contribution from the private sector is limited to TVET. The private sector would rather spend money to train their own workforce than to ask TVET institutions to train their staff due to the poor quality of the course offerings.
8. Lack of opportunities to transfer across streams (e.g. TVET to University) in the education system. The idea of enabling students to move from one stream to another with ease so that they can see a better career path whichever entry they take. Even though SLQF established in Sri Lanka, not much support or interest in its enforcement.
9. Each part of the education budget secures its own offering with little share for the students' needs or demands. Poverty is still a preventive factor. Many students leave school after primary or elementary or even secondary because they are expected to work and help with the family's subsistence. There is no money to support their education unless there is a scholarship scheme for them.
10. Lack of industry experience for many TVET teachers. TVET institutions cannot hire trainers from the industry as their fees are much higher. Often, TVET institutions have to hire fresh graduates of the TVET system. These graduates need to be sent for the teacher training each year for technical and pedagogical skills development.
11. Lack of motivation for students to invest in TVET. Finishing TVET will not immediately land them high-paying jobs. Students invest on courses that meet their needs. Most TVET institutions in developing countries have difficulty in attracting students including Sri Lanka. Social recognition for the jobs is the main factor in attracting students for skill intensive occupations and courses.

5.2 Current specific issues in local TVET system

1. There is no motivation to start NVQ level 5 and above programs due to lack of investments, training, policy directives etc.
2. Poor recognition from society for skill trades e.g. Not incorporated NVQs in wage boards, no national policy for recruitment for skill-based employment etc.
3. Existing method of doing the semester exams in NVQ Level 5 and 6 in public and private sector institutions creates heavy workload on the TVEC especially when it comes to paper setting and moderation.
4. Parents are reluctant to send their children to industrial training due to less attractive industry environment and no motivational emoluments.
5. Disruption of Industry due to current situation specially Hotel sector, Health sector, and Beauty culture.
6. Difficult to conduct theory classes due to less educated teachers because of less salary paid in TVET centers.
7. Proper lab facilities and workshop resources are not available in training centers.
8. No proper online training resources are available, and no trainers training are conducted.
9. No proper online platform to deliver knowledge components and lack of audio video resources available.
10. No proper comprehensive Management Information System (MIS)
11. Most of youths are requesting new technology related areas than the traditional courses
12. Most Industries request technically qualified personnel
13. There is a considerable gap between supply of competent passed out trainees with industrial demand.
14. Present financial crises faced by the industry
15. Disruption of social system due to various reasons.

5.3 Global and Local Challenges of TVET

Jobs are changing from country to country because of the technology, cost and competence. Technology plays a major role in deciding what kind of jobs remains to the human and need human intervention. The costs of labour, power, transport, raw materials are all part of the decision matrix used in choosing where to locate manufacturing and support services.

Change of Technology

The massively accelerated application of robotics in manufacturing has changed the decision matrix, and low labour costs in developing economies are now being offset by lower labour input costs in developed economies adopting robotics and new materials.

Further drivers for this trend are the requirement for far greater precision in manufacturing, the increasing demand for weight reduction and the need for materials strengthening using highly advanced carbon fiber tech and metal alloys.

Latest Technological Trends in the TVET sector

It is required to change the TVET according to the latest trends in technology as industry changes rapidly according to the latest technology. The 21st century skills set need to be embedded to the TVET curricula to allow for advanced, responsive and fit-for the purpose teaching learning materials, methods and the technologies.

Some of the latest technical trends are listed in **Annexure 2** and need to be considered when implementing such courses with new technologies. It is recommended to partner with the relevant industries when planning and implementing such courses and to find OJT placements.

CHAPTER 06

PROPOSALS FOR REFORMS IN TVET

National Policy on TVET clearly describes the issues, policy directives and strategies for the reforms in TVET sector which could be used as long-term goals. Recent social and technology trends could be considered in this document to address recent issues and provide short- and medium-term guidelines to steer the TVET sector.

6.1 Establish Avenues for Lifelong Learning in TVET

Lifelong learning is the learning activities thorough out the life in order to achieve competencies in terms of skills, knowledge and attitudes within personal, civic, social and employment related perspective. Lifelong learning spans from pre-school to post retirement and enable citizens to acquire necessary competencies to engage in economic and social activities while achieving mental and physical wellbeing. In order to facilitate the process of lifelong learning, conducive policies need to be formulated and plans need to be developed to recognize competencies achieved through formal, informal and non-formal training in the contexts of workplaces, training centers, homes etc.

Sri Lanka is experiencing an increase in aged population of 9.2% in 2001 towards estimated 16.7% by 2041. TVEC as the apex body for TVET in Sri Lanka, need special focus on developing policies and plans to promote lifelong learning enabling appropriate learning pathways according to abilities, needs and interests of the such potential groups of people. Open and flexible learning offered with tailor made courses provide more opportunities to cater the needs of the potential learners. For the people ending their careers due to different reasons need to provide with guidance and counseling with comprehensive lifelong learning strategies to engage in gainful and productive activities.

In order to achieve above goal, the TVET needs partnerships with different stakeholders and make collaborative efforts at National, Provincial and District level with the leadership of government, private and NGO training providers with the support of local and international donors, career guidance centers and other interested organizations. Labour market information system needs to publish related demand information to align the focus toward specific areas for lifelong training programs. The policies need to be formulated to arrange adequate resources for proposed programs with the support of private, NGO and public organization through programs such as corporate social responsibility projects, charity programs and civil society movements. Further the access to awareness, education and training resources need to be strengthened for people in the rural areas, disabled and vulnerable groups in the society. Learning cultures need to be strengthened enabling learning at any age, any place and without any discrimination. Quality of these programs need to be ensured by the Ministry and TVEC with the support of widespread accredited training centers and trained officials.

The systems for lifelong learning need to be de-centralized with the support of stakeholders for activities such as awareness, information, career guidance and counseling, investments, matching demand and adjust learning, producing digital contents to access through mobile devices and computers etc. It is appropriate to develop innovative ways and means to improve access and flexibility using different interactive digital media, pedagogical approaches and updated quality material.

6.2 Innovation in Curriculum Development

CBT curriculum development process needs a wider analytical phase with a substantial "Industry Participation." The training based on these curricula shall be directly relevant to the work done at the real workplace situation in the industry. Thus, the curriculum development process leads to a system, which is based on learners" outcomes rather than the completing of a specific amount of training.

In order to meet this requirement, the CBT curriculum development process normally starts with the use of the "Functional map/Competency profile" developed for the Competency Standards generation. Subsequently "The Task analysis" which follows is a very essential step in the process of development of curricula for certificate levels (NVQ 1 to 4). Personnel from industry and experienced teaching / training personnel from training institutions are represented at these workshops.

Process of curriculum development need to be modernized to cater rising demand by the industry and training providers. Resource pool from the industry for various development works need to be established with the support of the private sector. Industry support is a must in every aspect in TVET from the design of skills until the on-the-job training.

6.3 Assessments and evaluations, Quality assurance

The national Policy on assessment of competence uses two different methods of assessment. For the award of Levels 1 – 4 qualifications the competencies are assessed through competency-based assessments focusing on the performance criteria specified in the respective units of competencies.

For Levels 5 and 6 qualifications two stages of assessment are employed. Modular based (Formative and Summative) assessments are conducted for the assessment of learning outcomes as specified in the curricula. Whether the trainee is competent or not yet competent shall be decided through a competency-based assessment with respect to all units of competence that constitutes the qualification which shall be conducted by a registered / licensed assessor. Records of the continuous assessments and the summative assessment conducted shall form part of the evidence used in deciding the competence of the trainee. A viva voce conducted by an assessment panel nominated by TVEC shall be a mandatory part of the CBA. The assessment panel shall consist of two assessors with at least one assessor representing the industry which deals with the particular area of technology. The final outcome of the assessment shall be determined by the assessment panel. To cater the rising demand and higher expectation of the stakeholders, online knowledge assessments need to be introduced to the TVET sector.

6.4 Development of Online Question Banks

Once developed the validated question banks in each technology area, the TVEC can generate the paper and do the semester end exams in uniform manner island wide. This will ease the workload of the TVEC and improves the service quality as well. The TVEC needs to develop question banks for each technology area with the support of the industry and the qualified resource personnel.

Further, the assessment and validation should be transparent and consistent. A separate independent mechanism should be established for this purpose.

6.5 Institutional needs for the TVET sector, Training opportunities

Apprenticeship training is based on rural industries and the development of such industries is essential for better apprenticeship training. Therefore, industry support system should be introduced when they are supporting apprenticeship training. Such support system can be initiated with some kind of tax concession etc.

In addition, it is essential to introduce apprenticeship allowance for downtrodden students in specific trades like carpentry, welding etc. to motivate students in rural areas.

Competency Based Assessment is the process of collecting evidence and making judgments as to whether competency has been achieved by the applicant at a given point of time. The process involves the collection of evidence to ascertain that a candidate can demonstrate the application of knowledge, skills and attitudes specified in the National Competency Standard. As TVET policy iterates, it is required to introduce a flexible mode of assessment and evaluation system for technological subjects that minimize the examination pressure. It is required to establish National Assessment body that develop, improve, plan and implement assessments in the country.

6.6 "One TVET" Concept and Proposed Activities

The TVET system was unified in 2004 after introducing the NVQ framework and all traditional courses with different levels and time durations were transformed into quality assured and accredited courses. Next level requirements are listed herewith for further consideration of the One TVET concept.

1. Focus and increase access of TVET to all target groups including trainees, students, employed (formal and informal) persons, women, disadvantaged and vulnerable groups, migrants, marginalized groups etc.
2. Promote "One Assessment-One certificate" concept to unify the qualifications and make TVET qualification easy to understand by the industry.
3. Establish one TVET staff service enabling mobilization of human resources to required centers in different geographical locations and different institutions. This need to focus on CPD of the staff.
4. Bring labour market intermediaries (different institutions work for labour market systems) under common guideline and plans.
5. Focus TVET to reduce unemployment and rural poverty by linking with entrepreneurship education and training for self-employment.
6. Industry on-the-job (OJT) training opportunities and job opportunities are to be uploaded to a central database and each industry needs to be given OJT quota to train the workforce.
7. Rationalize the TVET sector for optimum utilization of resources and diversify course provision with clear demarcation of institution training delivery within same geographic reach.
8. Establish one TVET strategy through proper policies, coordination mechanism and funding.
9. Brand "One TVET" and promote among youth with new and innovative areas of training.
10. Provide necessary resources and enable reforms and cater to better outputs with value addition in each step as a one network of public and private TVET institutions.

6.7 Career Guidance

It has been proposed following proposals in the NPTVET to be implemented by the stakeholders.

1. Establish National Career Guidance Council as the lead body for Sri Lanka career guidance service. Establish an interim mechanism until such council is formed.
2. Improve access to career guidance information and resources.
3. Establish nation-wide CAG network with general education, TVET centers and industry. School library must contain a Career Information unit.
4. Introduce co-curricular lessons on World of work and career guidance, where appropriate, in general education.
5. Encourage use of IT to improve CAG systems.

In the CAG research area, the following recommendations were made by the expert panels:

1. Establish CAG Research body under the Career Guidance Council at national level.
2. Establish think tank with the contribution of stakeholders with expert inputs to adapt international resources and best practices.
3. Establish National Web Portal for CAG.
4. Establish linkages with similar CAG institutes internationally.
5. Collaborate with relevant private and NGO partner agencies to be able to create PPP for career guidance purposes.

Further, the Career Guidance should be introduced to general education syllabus at senior secondary school level and these policies are covered school-based career guidance policy by the National Education Commission:

1. To teach make students aware on the value and the recognition of skill jobs, and What they are earning from society opportunities for early employment with attractive remuneration and upward mobility in Tertiary Education.
2. Awareness to parent of senior secondary school teachers that Vocational Education through the NVQ system is a recognized alternate avenue to conventional university education, leading to academic qualifications fitting into the Sri Lanka Qualification Framework (SLQF)
3. Greater collaboration is necessary with similar Tertiary Education Organizations such as Organization of Professional associations (OPA) and the Open University of Sri Lanka (OUSL) and moreover with the industry for training placements and resources.
4. It is recommended to introduce new Diploma and Degree programs under UoVT in Career Advice Guidance for the staff involved in career guidance in the TVET sector for the improvement of career guidance service delivery and their own career progression.

6.8 Staff Development Center for TVET

As the TVET policy 2019 specifies, pre-service teacher education and in-service teacher education and training programmes will be reviewed to meet the competencies required for a technology teacher in the TVET sector. It is required to implement a teacher training program for private sector TVET teachers in association with the industry to enhance their technical and teaching skills. Further reliable and sustainable teacher education program is required to upgrade the professional qualifications of technology teachers and allied staff. Therefore, TVET sector needs Staff Development Center for the capacity building of its staff.

6.9 Reforming Digital Learning in TVET

Computer literacy being a critical factor in digital leaning has shown positive trend during past decade in Sri Lanka. While mobile phone penetration exceeds 100% in the country, the smart phone penetration said to be better than other Asian countries in the region. These statistics are encouraging the use of digital contents and widening opportunities for digital learning platforms the TVET sector. Therefore, it is suggested to promote digital learning as per the new government manifesto, which will benefit students and employed youths, who have difficulties in access and affordability. Therefore, it is proposed to introduce digital learning starting from interactive contents, blended learning opportunities with smart classrooms to online knowledge assessment systems in the TVET sector.

6.10 Strengthening NVQ framework

The NVQ framework is one of the key strategies in unifying the large number of conventional and scattered qualifications in TVET sector of Sri Lanka. Therefore, NVQ framework must be robust and responsive to cater emerging labour market needs. In this context it is required to improve existing NVQ framework according to the current challenges and international best practices.

Accordingly following areas have been identified for improvements by benchmarking international best practices.

1. Strengthen linkages of industry, labour market and TVET
2. Implement new programs for emerging new economic sectors.
3. Maintain highly skilled training delivery through a system of accreditation and improve the quality of programs through quality management system.
4. Improve operational and managerial efficiency of public sector training providers including rationalizing and improving the public sector
5. Promote private sector involvement in TVET provision and development
6. Create linkages and pathways between the various education sectors

Government's vision is to strengthen and expand the NVQ framework by introducing higher levels up to level 10, which will eventually facilitate a Special Degree/ Master Degree, and offer qualifications up to the PhD level. This will help to gain the recognition and open the NVQ framework for benchmarking and mutual recognition with foreign countries.

CHAPTER 07

USE OF NEW TECHNOLOGY FOR THE PROVISION OF TVET

7.1 Developing Online Platform for TVET Sector

Approximately over 110,000 students seek vocational education annually. As detailed below, they are registered with Tertiary & Vocational Education Commission (TVEC) accredited institutions at both Public and Private institutions. Vocational and Technical studies are conducted at National Vocational Qualifications (NVQs) and Certificate levels.

NVQ programmes at level 1-4 are at hand skills level and therefore, less theoretical and academic engagements compared to level 5 and 6 which are at Diploma level. However, considering the prevailing situation and possible revisit to future programmes, part of the NVQ level 3-4 courses can be directed to online studies with properly administered e-learning system.

TVEC registered training institutions, accredited courses and enrolled students						
Category	**NVQ Level 1-4**			**NVQ Level 5 & 6**		
	Training Institutions	**Accredited Courses**	**Enrolled Students ***	**Training Institutions**	**Accredited Courses**	**Enrolled Students ***
Public	472	1,953	96,514	80	212	9,855
Private	262	559		20	27	
Total	**734**	**2,512**	**96,514**	**100**	**239**	**9,855**
*** Enrollment details are based on the year 2018 data. Since batch entries are not completed by some institutes yet.**						
Considering only the NVQ Courses						
Excluding NVQ Level 7 Courses						

Major public sector training institutions engage in the vocational & technical education are;

- Department of Technical Education & Training (DTET)
- National Apprentice and Industrial Training Authority (NAITA)
- Vocational Training Authority (VTA)
- Ceylon–German Technical Training Institute (CGTTI)

The above institutions come under the Ministry of Skills Development, Employment and Labour Relations. In addition, institutions such as National Youth Service Council, NIBM, NSBM, Institute of Printing, University of Vocational Technology and University Colleges etc. that provide technical education operate under different ministries.

All institutions, both in public and private sectors that provide technical and vocational education in the country should be registered with TVEC and accredited their courses. Most of these institutions currently lack online courses, although some institutions are partly introduced with e-learning programmes. The readiness of the institution with the course material, electronic presentation and assessments are key factors to decide on the online launch.

7.2 Current status of online learning Facilities at major public institutions

7.2.1 Department of Technical Education Training (DTET)

In the department there are 30 technical collages and 9 collages of technology and more than 40,000 students studying for their vocational qualifications in 35 disciplines. However, most of the NVQ 3 & 4 courses are skills based and unable to conduct distance learning programs, but for NVQ 5 & 6 are mostly theory based and could be delivered with an e-learning facility.

Therefore, the Department have planned to introduce "Google classroom", an e-learning platform which is freely available. The Google class room is easy to learn and is a free web service, developed by Google for schools, that aims to simplify creating, distributing, and grading assignments in a paperless way. However, access by all students would be a concern as there is no facility for free internet service for students and lecturers.

7.2.2 Vocational Training Authority (VTA)

VTA can complete currently provide only the knowledge component on selected programmes and some practical components. Action has been initiated on certain study programmes as summarized below:

- Programme on Information & Communication Technology (ICT)
  - All instructors have already assigned some work to student during this period. VTA has informed ICT Five instructors to use **Zoom, Webex App,** and **LMS level 5** technologies to conduct online sessions.
- Creating WhatsApp groups for the following courses:
  - **Quantity Surveying Level 5** -Use WhatsApp group to share the notes and assignments
  - **Fashion Designer Level 5,6**- Use WhatsApp group to share the notes and assignments
  - **Montessori Teacher Training, NVQ Level 4 at NVTI Narahenpita**- use Google classroom to share the notes and assignments
  - **Beauty culture, NVQ Level 4 at NVTI Narahenpita**- Use WhatsApp group to share the notes and assignments
- Online Learning Management system (LMS) of Sri Lanka Korea National Vocational Training Institute (K Tec) Orugodawatta

7.2.3 National Apprentice and Industrial Training Authority (NAITA)

National Apprentice and Industrial Training Authority (NAITA) delivers its training under following Modes/categories.

- Enterprise Based Apprenticeship
- CBT Training at National Institutes and Few Distract Training Centers.
- Organize In-plant training for Undergraduates and Diploma Students
- Organize on the Job Training (OJT) for VTASL and DTET students

First two modes are main streams of training of NAITA. **Enterprise Based Apprenticeship** is the core training mode of NAITA. Annually, nearly 25000 such apprentices are enrolled to this system island wide through its district office network. These apprentices are scattered in different level industries/organizations.

Students are actually practicing under "Learning by Doing" concept and as a result they are highly skillful with latest technology and practicing technology. However, NAITA delivers its relevant knowledge component through distance learning approach mechanism by using written lessons developed by Head office, Learner Resources Development Section and supplementary instruction classes that organized periodically at district level.

Computer used e-learning practice in high end education system such as universities and classroom level are not attractive at Apprentices who are spend their total period at workplace learning with less time available to study. They need rather simple digital learning mechanism that they can use at any free time and even at workplace and during travelling. That was the reason that NAITA required mobile App based learning and with facilities of monitoring their learning.

In accordance with government policy on digitalization, NAITA formed a committee with the guidance of Addl. Secretary (VT) with comprising TVEC, Ministry, ICTA and NAITA members to continue on the digital learning system particular to NAITA Apprenticeship system considering its nature of learning, physical distancing etc. NAITA have made efforts to start online lessons for theory part in the National Institutions which come under it.

7.2.4 Ceylon–German Technical Training Institute (CGTTI)

CGTTI conducts mainly NVQ 3-4 level courses which involved practical trainings. However, considering the prevailing situation it has started delivery of lesions and some assessments by using WhatsApp applications.

7.2.5 Current Demand for Vocational and Technical Education

The attached table on students' enrollment in 2020 with TVEC registered institutions provides information relating to number of students registered with each course and ranked the details of the most demanded courses. As observed out of total registered students of 109089 approximately 70% demanded registration on 20 courses as detailed below.

Top Twenty Demanded Courses

	Occupation	
1	Information and Communication Technology Technician	9,576
2	Construction Craftsman (Masonry)	7,534
3	Electrician	6,844
4	Welder	6,327
5	Automobile Mechanic	5,472
6	Beautician	4,722
7	Cook	3,847
8	Baker	3,614
9	Tailor	3,519
10	Hairdresser	3,218
11	Draughts person	3,048
12	Mobile Phone Repairing Craftsman	2,962
13	Machinist	2,680
14	Automobile Electrician	2,005
15	Computer Applications Assistant	1,987

16	Refrigeration & Air Conditioning Technician	1,951
17	Wood Craftsman (Furniture)	1,846
18	Plantation Crop Technology	1,605
19	Business Associate	1,578
20	Pre-School Management	1,553
Total		**75,888**

This will provide us the opportunity for prioritization of the programmes for online delivery of knowledge component (cognitive) of the course covering majority of the students.

Considering the feasibility of implementing online or blended courses, following areas could be considered as a pilot basis in the TVET sector.

- Computer Applications Assistant
- Information and Communication Technology Technician
- Multimedia Designing Associate
- Software Developer
- Web Developer
- Secretary (Secretarial Practices)
- Cashier (Super Market/ General)
- Business Associate
- Clerk (General)
- Interior Decorator
- Tour Guiding
- Communication Assistant
- Journalist (Print Media)

7.2.6 Short Term Strategies for eLearning development and implementation

In line with the above prioritization, it is proposed to consider following steps as a short-term strategy while policy level engagement in a **Road Map proposed in the attachment is considered as a long-term strategy.**

1. Circulation of following online resources among all public private TVET institutions (about 1400 centers) for eLearning development and implementation.
    a. Digital learning management systems (LMS)
    b. Systems purpose-built for mobile phones
    c. Systems with offline functionality,
    d. MOOC Platforms
    e. Self-directed learning contents
    f. Mobile reading applications
    g. Collaboration platforms that support live-video communication
    h. Tools to create of digital learning content

2. Request for implementation of free access policy for course contents for trainees and trainers. Request was already made to the authorities to take a decision.
3. Promotion of eLearning quality criteria to support development of online content and interactive learning activities.

CHAPTER 08

IMPROVING PLANNING AND MANAGEMENT OF E-EDUCATION IN TVET

Government's vision is to develop an education system which will provide distance education with a skills-based job oriented higher education system using self-learning, guided learning, group learning and project training in order to produce a creative employee. It will also encourage persons to learn and acquire new knowledge and skills, without any disruption to their employment. Online education, weekend education and open learning will be used to deliver these courses with a proper quality assurance.

8.1 Roadmap for Development of Distance Learning in TVET

Draft roadmap for development of a distance learning system in TVET Sector is proposed and shared with all TVET institutes to take part in the development process. Key activities of the development roadmap are itemized as follows:

1. Develop an eLearning strategy with leadership and planning

Prepare a shared vision document considering use of new and emerging technologies focusing delivery of vocational education programs. It shall contain how other management and administration function would support in developing eLearning and implementation. A policy needs to be established to strengthen delivery of knowledge component in every course with step-by-step trainee engagement plan. Social and institution acceptance is a must with the proper quality assurance of eLearning courses.

2. Develop eLearning culture in TVET institutes

TVET trainers must be encouraged to use e-contents freely available in the web and use eLearning with active participation of trainers and trainees. It is encouraged to use Learning Management System (LMS) to upload the content and arrange online learning activities. Due recognition and acceptance of eLearning course must be provided, against classroom/lab learning established in institutes, employers and the society.

3. Develop ICT infrastructure

All TVET centers need to be equipped with range of ICT equipment with stable broadband internet connectivity. Each trainee must be provided with a device which can access contents and free access policy for the learning contents. Courses with local contents with local languages must be increased and readily available for free access.

4. Trainer Training on eLearning development and implementation

All trainers and training managers must be given with eLearning development and implementation online course to build the capacities to convert their existing courses or start new courses and deliver them in eLearning mode. Trainers must be encouraged to promote peer learning and peer validation of courses and contents, to improve the quality of delivery. Trainers must be aware to follow eLearning quality criteria stipulated by the Tertiary and Vocational Education Commission (TVEC).

5. Develop eLearning as an integral part of all TVET courses as a means of delivery of entire knowledge component

Trainers must be equipped with the necessary tools, methodologies and interactive material to convert entire knowledge component of the course to an online content. All trainees must be provided with orientation training to access online content and follow course with the support of external supporting content and relevant learning activities.

8.2 Recommendations for Improving e-Education in TVET

Following recommendation are made after the consultation with different stakeholders in providing solutions to the issues arisen during pandemic period.

1. Set up of Steering committee for project implementation

It is required to set up a Steering committee for project implementation to evaluate the implementation, challenges and possible solution to the TET providers in distance mode. Centralized resource pool to be maintained to provide necessary assistance and consultation to start new course and convert existing courses into the distance mode.

2. Maintaining a strong monitoring phase

The entire eLearning process must be monitored by a team to improve the overall performance of the system. Further, the monitoring process should be divided into many aspects such as training delivery, online exams, assignment submission, user feedback, technical performance, etc.

3. Policy for Free Access and Connectivity for Education

A common policy for free data access and connectivity for education purposes should be introduced to all the users including who are engaging with the eLearning material in TVET sector. Access to data may experience difficulties as per the location. Therefore, users should have the freedom to select the best internet service provider when connecting to the system.

4. Online Digital Information and Resources Platform

It is highly required to establish Online Digital Information and Resources Platform to maintain training center information, student information, course information, staff information, assessment information and quality related information. This system needs to analyze and visualize sector data and link with the labour market information to facilitate informed decisions regarding the human resource demands of the industry. This information could be used as tools for the career guidance. Such centrally managed data system is fundamental to assess overall performance of the TVET sector.

5. Virtual Library

A virtual library should be attached to the eLearning system where instructors and students can gain the relevant subject knowledge by referring to various online materials such as video programs, audio programs and e-books. As a result, the respective reference materials can be stored in a virtual library with access facilitated for current and future students.

CHAPTER 09

SPECIAL/ NON-FORMAL EDUCATION

The world is in the trough of the Kondratiev wave which began during the Second World War. A rising wave of technology-driven growth, slowed down since the mid-1970s, with cyclic crises at shorter intervals, ending in the 2008 Global Financial Crisis. For several years, economists have predicted a major world economic crisis. The onset of the Covid19 pandemic acted as a catalyst, and the economic downturn may be with us for years. Thereafter, the post-Second World War pattern should repeat itself, with technology-driven expansion, and a shift in the world's economic centre of gravity, from the USA and Europe to the East-Asian region, transforming the world economic order.

In this period of uncertainty, setting long-term plans for vocational education will be hard. The programme for the immediate post-Covid19 period must tackle the effects of the economic downturn. The economic upturn, starting in 5-10 years, would see unprecedented, technology-driven growth. However, Europe, North America and the oil-based economies of the Middle East may lose importance, so we must seek new labour markets. However, it is difficult to predict in which areas the growth of demand for skills will occur.

9.1 Preparing for technology

What we should probably do is prepare for the wave of new technology, which may be based on Artificial Intelligence, robotics and internet-based devices for e.g. to prepare for different skill sets in the agricultural sector.

Workplaces are becoming highly dependent on networks and their technologies. Vocational training in these areas will be vital. We will need to focus more on area networks as much as in-house networks, internet services, network security and online service desks; entailing knowledge of Firewalls, switches and other hardware dependent on specific software, optimising bandwidth etc.

9.2 Adapting the education system

We must create new type of students, capable of adapting to shifting skills needs. In Cuba this has been achieved by making the entire upper high school curriculum vocation-based. In Sri Lankan terms, after the O/L, students would pick what general area of expertise in they wish to be employed. Students intending to join medical occupations, would be trained to be nurses and medical technicians so students going on to become doctors would get a thorough grounding in the profession. Similarly, engineers would be grounded in the skills of technicians and mechanics, and lose their aversion to getting their hands dirty.

The alternative is the Germanic system, also very efficient, which has vocational institutes and universities – the latter (although very practical) mainly for deeper theoretical work and research, with student from the former able to go to the latter.

9.3 Distance learning

The Covid19 pandemic has increased the importance of distance learning. However, while vocational institutes shifted rapidly to internet-based theory classes, they found it impossible to impart skills, which require a hands-on approach. Online teaching can also be extremely tiring for the teachers.

Distance learning means embedding very special skills in delivering curriculum content – teacher training for delivery is very different to face-to-face teaching; upskilling in managing technology such as online delivery and troubleshooting; and mentoring skills. These areas needed to be explored, and extensive retraining carried out.

The major obstacle encountered was that 40-50% of students did not have access to the internet, mainly because they had no internet devices. This drawback may be overcome if the government adapts its current laptop PC programme to offer students cheap tablet PCs. Factories in e.g. China produce tablets at about US$ 20 (Rs 4,000) compared to a laptop price of about Rs 40,000. If the government were to buy quality-assured laptops in bulk, it could supply the students at this level of pricing, making the devices affordable.

REFERENCES

- Democratic Socialist Republic of Sri Lanka: Support for Human Capital Development Initiative, Technical Assistance Report, Project Number:54061-001, March 2020
- National Policy for Tertiary and Vocational Education http://www.tvec.gov.lk/wp-content/uploads/2019/05/Policy-Book-English-web.pdf
- Proposals for consideration- Vocational Education Core Group Meeting –Presidential Task Force on Education, Sri Lanka –April 27, 2020.
- Summary of Contribution by Professor Dayantha Wijayesekera, Vocational Education Core Group Meeting – Presidential Task Force on Education, Sri Lanka –April 27, 2020.
- Tertiary and Vocational Education Commission Web site http://www.tvec.gov.lk/
- President appoints Education Task Force to deal with interruptions due to COVID-19 http://www.ft.lk/news/President-appoints-Education-Task-Force-to-deal-with-interruptions-due-to-COVID-19/56-698494
- Public Investment Programme (2017-2020) http://www.npd.gov.lk/index.php/en/2017-03-02-07-02-41/publications/38-public-invesment-programme.html
- The Future of TVET - TVET Journal https://www.tvetjournal.com/the-future-of-tvet.html
- Feasibility of using elearning in capacity building of ICT trainers and delivery of technical, vocational education and training (TVET) courses in Sri Lanka. SEAVERN Journals, https://www.academia.edu/download/50114901/FEASIBILITY_OF_USING_ELEARNING_IN_CAPACI20161104-6474-1rwpkbg.pdf
- Sri Lanka and the TVET Sector. Using ICTs and blended learning in transforming technical and vocational education and training, http://oasis.col.org/bitstream/handle/11599/2718/2017_Latchem_Using-ICTs-and-Blended-Learning.pdf?sequence=1#page=102
- Labour Market Information Bulletin, Tertiary and Vocational Education Commission, Vol 2 of 2016, http://www.tvec.gov.lk/?page_id=3424
- National Skills Development Report 2018/19 (Draft) – TVEC http://www.tvec.gov.lk/wp-content/uploads/2016/12/NSDR_2018_2019_Draft.pdf

APPENDIX 1-NVQ LEVEL DESCRIPTORS

Level descriptors for the National Vocational Qualifications Framework (NVQF) of Sri Lanka.

Level	Process	Learning demand	Responsibility
1	Carry out processes that: - are limited range - are repetitive and familiar - are employed within closely defined contexts - are single processes	Employing: - recall - a narrow range of knowledge and skills - no development of new ideas	Applied: - in directed activity - under close supervision - with no responsibility for the work or learning of others
2	Carry out processes that: - are moderate in range - are established and familiar - offer a clear choice of routine responses - involve some prioritizing of tasks from known solutions	Employing: - basic operational knowledge and skill - readily available information - known solutions to familiar problems - little generation of new ideas	Applied: - in directed activity with some autonomy - under general supervision and quality checking - with significant responsibility for the quantity and quality of output - with possible responsibility for the output of others.
3	Carry out process that: - require a range of well-developed skills - offer a significant choice of procedures requiring prioritization - are employed within a range of familiar contexts	Employing: - some relevant theoretical knowledge - interpretation of available information - discretion and judgment - a range of known responses to familiar problems	Applied: - in directed activity with some autonomy - under general supervision and quality checking - with significant responsibility for the quantity and quality of output - with possible responsibility for the output of others.

4	Carry out process that: - require a wide range of technical or scholastic skills - offer a considerable choice of procedures requiring prioritization to achieve optimum outcomes - are employed in a variety of familiar and unfamiliar contexts	Employing: - a broad knowledge base incorporating some theoretical concepts - analytical interpretation of information - informed judgment - a range of sometimes innovative responses to concrete but often unfamiliar problems	Applied: - in self – directed activity - under broad guidance and evaluation - with complete responsibility for quantity and quality of output - with possible responsibility for the quantity and quality of the output of others
5	Carry out processes that: - require a wide range of specialized technical or scholastic skills - involve in a wide choice of standards and non-standards procedures - are employed in a variety of routine and non-routine contexts	Employing: - a broad knowledge base with substantial depth in some areas - analytical interpretation of a wide range of data - the determination of appropriate methods and procedures in response to a range of concrete problems with some theoretical elements	Applied: - in self - directed and sometimes directive activity - with broad general guidelines or functions - with full responsibility for the nature, quantity and quality of outcomes - with possible responsibility for the achievement of group outcome
6	Carry out processes that: - require a command of wide- ranging highly specialized technical or scholastic skills - invoice a wide choice of standards and non-standards procedures, often in non-standards combinations - are employed in highly variable routine and non-routine contexts	Employing: - specialized knowledge with depth in more than one area - the analysis, reformatting and evaluation of a wide range of information - the formulation of appropriate - responses to resolve both concrete and abstract problems	Applied: - in managing processes - within broad parameters for defined activities - with complete accountability for determining and achieving personal and / or group outcomes

7	Carry out process that: - require command of highly specialized technical or scholastic and basic research skills across a major discipline - involve the full range of procedures in a major discipline - are applied in complex, variable and specialized contexts	Employing: - knowledge of major discipline with areas of specialization in depth - the analysis, transformation and evaluation of abstract data and concepts - the creation of appropriate responses to resolve given or contextual abstract problems.	Applied: - in planning, resourcing and managing processes - within broad parameters and functions - with complete accountability for determining, achieving and evaluating personal and / or group outcomes

APPENDIX 2- NEW AND EMERGING TECHNOLOGIES

1. Mechatronics Technology

Mechatronics is a technology integrated with mechanical, electrical, electronics and information technology. Modern technological applications such as Robotics, Computer Numerical Control Systems (CNC), Computer Aided Manufacturing (CAM), Factory Automation (FA) works with the systems driven by the mechatronics technology.

At present most of the industries in the world are having manufacturing plants using automated high-tech computerized mechanical, electrical & electronic systems. To obtain high productivity, those high-tech industrial equipment and machinery are to be maintained/serviced periodically & carryout necessary repairs to prevent breakdowns for smooth function of the industry. As a result of these modern technological applications, high demand has been created in the industry for mechatronics related technologies. Present day most of the manufacturing plants are incorporated with mechatronics systems. Therefore, the mechatronics play a major role in the modern industry.

2. IoT Technology

Recent technological advances are revolutionizing our personal lives by creating new avenues for economic growth and employment and improving the quality of life. These technologies facilitate easy access to data and information and make extensive use of computing and information technologies. The Internet of Things (IoT) is a key manifestation of these technical advancements and represents the integration of computing technologies with the physical world, with the aim of optimizing the operation of physical infrastructure, social services, and industries.

Some typical IoT applications include wearable health-monitoring devices used to sense vital signs for an individual, devices used to sense seismic activity in oil rig fields, devices that sense thermal activities in a data centre and enable the actuators to control thermal imbalance, devices that provide vision and security solutions for intelligent autonomous vehicles, devices that enable secured financial transactions on a public domain like cloud platforms.

3. Virtual Reality and Augmented Reality

Virtual Reality (VR) immerses the user in an environment while Augment Reality (AR) enhances their environment. Although VR has primarily been used for gaming thus far, it has also been used for training, as with Virtual Ship, a simulation software used to train U.S. Navy, Army and Coast Guard ship captains. The popular Pokémon Go is an example of AR.

Both VR and AR have enormous potential in training, entertainment, education, marketing, and even rehabilitation after an injury. Either could be used to train doctors to do surgery, offer museum-goers a deeper experience, enhance theme parks, or even enhance marketing, as with this Pepsi Max bus shelter.

There are major players in the VR market, like Google, Samsung, and Oculus, but plenty of startups are forming and they will be hiring, and the demand for professionals with VR and AR skills will only increase. Getting started in VR doesn't require a lot of specialized knowledge. Basic programming skills and a forward-thinking mindset can land a job, although other employers will be looking for optics as a skill set and hardware engineers as well.

4. Artificial Intelligence (AI)

AI is already significantly impacting the way customers interact with businesses via intelligent websites and bots, and these tools are becoming increasingly commoditized and integrated into daily work, the report noted.

"The largest impacts across all industries—from retail to healthcare, hospitality to finance—are felt when AI improves data security, decision-making speed and accuracy, and employee output and training," "With more capable staff, better-qualified sales leads, more efficient issue resolution, and systems that feed actual data back in for future process and product improvements, companies employing AI technologies can use resources with far greater efficiency. Best of all, as investment and competition increase in the AI realm, costs are reduced."

5. Blockchain

More organizations are exploring and implementing blockchain to solve the increased need to secure and manage transactions across the internet.

Blockchain, sometimes referred to as Distributed Ledger Technology (DLT), makes the history of any digital asset unalterable and transparent through the use of decentralization and cryptographic hashing.

A simple analogy for understanding blockchain technology is a Google Doc. When we create a document and share it with a group of people, the document is distributed instead of copied or transferred. This creates a decentralized distribution chain that gives everyone access to the document at the same time. No one is locked out awaiting changes from another party, while all modifications to the doc are being recorded in real-time, making changes completely transparent.

6. 3D Printing Technology

3D printing or additive manufacturing is a process of making three dimensional solid objects from a digital file.

The creation of a 3D printed object is achieved using additive processes. In an additive process an object is created by laying down successive layers of material until the object is created. Each of these layers can be seen as a thinly sliced horizontal cross-section of the eventual object. 3D printing is the opposite of subtractive manufacturing which is cutting out / hollowing out a piece of metal or plastic with for instance a milling machine. 3D printing enables you to produce complex shapes using less material than traditional manufacturing methods.

7. Drones, robots, and self-driving vehicles

Several autonomous technologies stand to shake up the parcel logistics industry including drones, delivery robots, self-driving cars, and driverless trucks. For the sake of this discussion, these will be divided into aerial (drones), land (robots), and automotive (self-driving or driverless vehicles) technologies. While each will transform some part of the logistics system, collectively they can fundamentally reshape it moving forward.

Drones, robots, and self-driving vehicles seem to have become weekly discussion topics for the logistics industry. With major players such as Amazon, Google, DPD, UPS, and even 7-Eleven committing serious resources to the development of the technology, there is consensus that the technology will play a crucial role in the future of the transport industry. If we accept this argument, then as an industry we must begin to consider the way this will

impact delivery organizations around the globe so we can start to prepare our systems, processes, and people for what's to come.

8. Clean technology

Clean technology, in short cleantech, is any process, product, or service that reduces negative environmental impacts through significant energy efficiency improvements, the sustainable use of resources, or environmental protection activities. Clean technology includes a broad range of technology related to recycling, renewable energy, information technology, green transportation, electric motors, green chemistry, lighting, Greywater, and more. Environmental finance is a method by which new clean technology projects that have proven that they are "additional" or "beyond business as usual" can obtain financing through the generation of carbon credits. A project that is developed with concern for climate change mitigation is also known as a carbon project.

Clean technology includes a diverse range of products, services, and processes that harness renewable materials and energy sources, dramatically reduce the use of natural resources, and cut or eliminate emissions and wastes. Clean technologies are competitive with, if not superior to, their conventional counterparts. Many also offer significant additional benefits, notably their ability to improve the lives of those in both developed and developing countries.

9. Nanotechnology

Nanotechnology is a field of research and innovation concerned with building 'things' - generally, materials and devices - on the scale of atoms and molecules. A nanometre is one-billionth of a metre: ten times the diameter of a hydrogen atom. The diameter of a human hair is, on average, 80,000 nanometres. At such scales, the ordinary rules of physics and chemistry no longer apply. For instance, materials' characteristics, such as their colour, strength, conductivity and reactivity, can differ substantially between the nanoscale and the macro. Carbon 'nanotubes' are 100 times stronger than steel but six times lighter.

Nanotechnology is hailed as having the potential to increase the efficiency of energy consumption, help clean the environment, and solve major health problems. It is said to be able to massively increase manufacturing production at significantly reduced costs. Products of nanotechnology will be smaller, cheaper, lighter yet more functional and require less energy and fewer raw materials to manufacture, claim nanotech advocates.

10. Healthcare Technology

Technological developments in healthcare have saved countless patients and are continuously improving our quality of life. Not only that, but technology in the medical field has had a massive impact on nearly all processes and practices of healthcare professionals. Electronic Health Records (EHRs) replacing outdated paper records has been a massive game changer for everyone in the medical world. Medical assistants to medical coding professionals to registered nurses are just a handful of roles that have been impacted by this industry-wide implementation.

Information and communication technology (ICT) link healthcare professionals – as well as professionals with patients. Email, smartphones, telemedicine, and telemonitoring systems are all used to share information and are especially useful for more rural areas and locations with a lack of facilities and/or specialists. Healthcare apps are constantly being developed for both healthcare and patient use. As one of the fastest-growing markets in mobile application development

From AI assisted surgeries, to online databases and improvements in the medical research field, every single invention creates a better chance of faster and easier treatment. The future of medicine will strongly rely on technology and it will help everyone feel safer and be healthier thanks to the services being provided by the healthcare industry.

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PRESIDENTIAL TASK FORCE ON SRI LANKA'S EDUCATION AFFAIRS

REPORT ON
TRANSFORMING NURSING TRAINING SCHOOLS (NTS)

1. THE GOVERNMENT'S VISION ON NURSING

The rapid spread of the global COVID-19 pandemic has showcased the robust nature of our public health care system with universal appreciation directed towards all medical staff including those in the nursing profession. Our health professionals continue to work tirelessly to contain the spread of the virus in Sri Lanka. In addition to these efforts, Sri Lanka has consistently achieved excellent health indicators such as our national maternal mortality rate and infant mortality rate despite only spending USD 145 per capita on health, this is also a testament to the strength and capacity of our medical sector.

The incumbent government's policy framework 'Saubhagye Dekma' or 'Vistas of Prosperity and Splendor' prioritizes the need to ensure that all citizens are 'productive and healthy'. In ensuring this, it calls for improved facilities and patient care services, the promotion of innovation, research and training across all aspects of the medical sector and for improvements to the nursing teaching schools. Nurses are considered an invaluable resource in Sri Lanka and are key contributors to our economic and developmental growth. Accordingly, they should receive comprehensive training not just in technical skills but also in soft skills, communications and empathy all of which will enable them to provide the best possible level of care to their patients.

Nursing is unique among health care professions in the world as it has multiple educational pathways leading to an entry-level license to practice. Nursing education at all levels needs to ensure that students have exposure to hands-on training that will improve their understanding of care management, quality improvement methods, systems-level change management, and the reconceptualized roles of nurses in a health care system that goes hand-in-hand with the norms, best practices, regulations, international standards and ICT in the digital era. Nursing education should allow for lifelong learning and include opportunities for seamless transition to higher degree programs.

Expanding the scope of nursing education will provide opportunities for the nursing profession to be upscaled to international standards by staying up to date with modern nursing techniques and methodologies that incorporate computer competency, English language proficiency and essential soft skills. Given the high demand for nurses within the local health sector, transforming the nursing education sector to meet international standards will draw more students to the profession, thereby helping meet the demand.

At present the foreign income generated by providing labor to the international market is a major source of income that increases the Gross National Production in Sri Lanka. However, Sri Lanka is not adequately equipped to supply skilled workers and professionals, such as highly trained nurses, to the global market. Hence, providing educated, skilled nurses to the world market would support the government reach its objectives in terms of economic development through human capital.

Additionally, Sri Lanka has a rapidly ageing population with non-communicable diseases that require a community based integrated approach for a chronic care model. The key to elevating the quality of life of our citizens requires the development of health infrastructure and outreach. For instance, introducing modern equipment and mechanisms to existing hospitals along with skilled personnel capable of using modern equipment. The implementation of modern technology in the health sector would not only increase quality of life for Sri Lankans but also promote medical tourism in the country.

2. TASK OF THE COMMITTEE

Evaluate and explore the current status of nursing education in the country and make recommendations for upgrading nursing education to a degree level with minimal disruption to existing training and employment processes.

3. PAST REPORTS OF NURSING EDUCATION

Numerous studies have been conducted with regard to nursing education in Sri Lanka. the following have been selected as having included feasible recommendations which, if implemented would contribute to the transformation of the nursing sector.

1. The National Health Policy (1992) proposed that nursing education should be upgraded to the degree level. This recommendation was reiterated in The National Strategic Plan for Nursing and Midwifery Development (NSPNMD) 2001- 2010).

2. Introducing Modern Nursing to Sri Lanka by Hewa. S, 2014

   This report presents the progress achieved by the Rockefeller foundation from 1948 to 1952, it also revealed that there were many flaws in different sections during this period in the nursing profession and supported the suggestions and recommendations provided by the Rockefeller foundation to the government. This report promoted the idea of ensuring the quality and quantity of the nursing community.

2. 3. Nursing Education in Sri Lanka: the challenges and vision for the future by Amarasekara, T. D. and Jayasekara, R. S. 2015.

   This review explores the evolution and existing situation of nursing education and its impact on developing professionalism in nursing. It discloses the major challenges for the nursing profession in Sri Lanka together with some recommendations, enabling the identification and development of an appropriate policy direction. The following constructive recommendations were made through this research:

   i. Consistency in scope of practice

      A consistent national framework for undergraduate nursing education should be developed and implemented across all undergraduate nursing programs.

   ii. Pre-registration nursing education

      A policy decision should be made concerning the bachelor degree as a minimum preparation for beginning professional nursing practice.

   iii. Teaching and learning

      It is essential that teaching and learning strategies should be improved by enhancing educators' knowledge and skills in line with the technologies in the new millennium.

   iv. Curricula content

      It is important that nursing curricula should stay abreast of the growing needs of healthcare and the community. It should also be culturally responsive and economically feasible.

v. Evidence-based practice

There is a considerable delay in acquiring evidence-based practice in Sri Lanka due to a lack of basic education and impediments in the evidence-based practice process.

vi. Allocation of resources and funding

It is vital that students and nurses in different sectors (educators, clinicians, administrators and researchers) have better working conditions and encouragement for further education, training and research

3.1. A history of nursing education reform in Sri Lanka

Since the establishment of the first nursing school of Sri Lanka by the British in 1939, there have been constant efforts to update nursing teaching schools in Sri Lanka. Over the years, nursing trade unions, experts and professional organizations have worked to upgrade nursing education in line with the global evolution of nursing. The ultimate goal of these attempts was to uplift the minimum educational requirement from a diploma level to a Bachelor Honors Degree in Nursing to improve the quality of health service in the country.

Some landmark changes to nursing education are listed below:

- The University of Ceylon proposed that a 5-year nursing diploma programme be developed in 1963 (de Silva 2004) but the programme was not implemented.
- University education for Sri Lankan nurses was next advocated for in 1968 (Carey &Dier 1995) and was supported by the International Council of Nurses and the WHO, who recommended that nurses' education should be based on the higher tertiary education system (Cameron 2001). It was not until 1994, however, that university education for nurses was introduced (Fernando 2005).
- In 1977, the Minister of Education Mr. Badudeen Mahamud requested that a nursing faculty be established at the University of Colombo.
- The National Health Policy (1992) proposed that nursing education should be upgraded to the degree level. This recommendation was reiterated in The National Strategic Plan for Nursing and Midwifery Development (NSPNMD) 2001- 2010).
- In 1993, the trade unions requested to start bachelor's degree programme through the UGC and Sri Jayawardanapura University. According to this request an experts committee was established under the chairmanship of Professor Nandadasa Kodagoda.
- In 1993, an experts committee was again established under the chairmanship of Professor Leela Karunarathna from University of Sri Jayawardanapura.
- The Open University was initiated a BScN programme for registered nurses of the MoH as a post-registration programme in 1994
- The WHO developed an action plan on the Nurse Family Health Service Recommended Bachelor's degree for Nursing in 2001.
- The Minister of Vocational Education and Training attempted to upgrade nursing education to a bachelor's degree in 2003.

4. CURRENT STATUS OF NURSING EDUCATION IN SRI LANKA

Nursing education in Sri Lanka can currently be accessed via nursing schools and select universities. As government institutions, nursing schools are attached to the Ministry of Health, while the University Grants Commission (UGC) and Ministry of Higher Education oversee the universities. There are also a large number of private sector nursing schools, but these are not recognized as nursing schools by the Ministry of Health (MOH), Sri Lanka Medical Council (SLMC) and Sri Lanka Nursing Council (SLNC) due to inconsistencies in programme standards and durations.

4.1. Pre-registration Nursing Education in Schools of Nursing

The first institutionalized nurse training commenced in 1939 with the establishment of the School of Nursing in Colombo (de Silva 1978). As of 2007, 16 schools of nursing throughout the country provide a 3-year Diploma level pre-registration nursing education and follow a national level curriculum that provides a national level framework for nursing education. Both Virginia Henderson's and the International Council of Nurses' definition of nursing were used as the foundation of the 3-year nursing programme (Cameron 2001). The current 3-year general nursing curriculum consists of 20 theory courses based on traditional medical model subjects such as Medical, Surgical, Pediatric, Psychiatric and Maternal nursing. The major aim of this programme is to prepare general nurses for employment in the national healthcare system. The entry qualification for the programme was upgraded to 13 years of formal education and GCE Advanced Level in 1992.

4.2. University Nursing Education

The then University of Ceylon proposed a 5-year nursing diploma programme in 1963 (de Silva, 2004) but the programme was not implemented. University education for Sri Lankan nurses was next advocated for in 1968 (Carey & Dier, 1995) and was supported by the International Council of Nurses and the World Health Organization (WHO).

5. METHODOLOGY FOR FORMULATING RECOMMENDATIONS

In line with the Terms of Reference (TOR) of the core group (CG) for transforming existing Nursing Training schools to a degree awarding level, the Hon. Minister, Secretary and other officials of the MOHE, UGC, and the CG engaged with key stakeholders including, University Professors, and trade union representatives to collect and analyze information in aid of formulating recommendations for reform. CG members formed subgroups which reviewed information available locally and internationally on nursing schools and nurse training programmes in order to better understand existing issues, areas for improvement and commonalities across programmes. These subgroups conducted meetings, discussions, interviews, web-based surveys, and studied several policy documents and produced their specific reports focusing on the following:

- The long-term evolution of nursing education and practice, and its current status, as well as a vision for its sustainable future.
- The challenges, barriers, anomalies and related issues thereto.
- A thorough study of local and international curricula, with a specific focus on those adopted by the UK, Australia, USA, India, the Philippines and Thailand.

- Partnerships with established and recognized international academic institutions providing nursing training and qualifications.
- A study of International Standards and regulations on nursing, their recognition and accreditation.
- The need to produce academically and professionally qualified nurses with excellent clinical, interpersonal and communication skills as well as managerial and leadership qualities together with decision making abilities conforming to the digital era.
- Developing a suitable business model to market nursing knowledge and skills internationally to meet the international demand for nurses with specializations such as adult nursing, child nursing, elderly care, and mental health nursing.
- Developing opportunities for nurses to obtain post graduate qualifications and advanced professional training.
- Explore innovative learning and teaching methodologies to create a conducive environment for nurses to continue their nursing education.
- Ensure that all NTS's comply with the regulations of the SLNC as per Act no 19 of 1988.
- Ensuring that there is a steady intake of at least 3000 nursing student per annum as per the existing service requirement of the Ministry of Health with additional numbers to cater to international needs.
- Upgrading the academic and professional qualifications of existing tutorial staff and nursing staff of the Ministry of Health through a suitable lateral entry mechanism.
- Identifying necessary amendments and reforms to the existing legislation on regulating nursing education and practice in Sri Lanka in order to facilitate the transformation of Schools of Nursing (NTS) to Degree-awarding level under the proposed National University of Nursing (NUN).

The input of each of the subgroups have been incorporated into this report after rigorous analysis and in-depth discussion between the groups. The recommendation formulated in line with their analysis will inform the decision making of the MOH and MOHE.

6. ANALYSIS OF THE PRESENT SITUATION

6.1. Present training curricula in Nurses Training Schools in Sri Lanka.

At present, the training curricula utilised in Nurses Training Schools in Sri Lanka leads to a Diploma in General Nursing after 3 years of full-time education. The current curriculum consists of 5,444 hours, which includes 1,713 hours of theory-based learning and 3,731 hours of laboratory and practical training. The total number of credits is 176.4; 114.2 with 62.2 credit hours for theory and practical training respectively. This curriculum was last revised in 2004 in collaboration with the WHO. The current study programme and curriculum can be seen in the attached annexure (see Annex 1 and Annex 2 respectively).

6.2. Current Issues in Nursing Education

Nursing education is currently available at several institutes, namely 16 nursing training schools under the MOH, one faculty and four departments of nursing within state universities under the purview of the UGC/MOHE as well as at private institutions run by different agencies such as private or corporative hospitals and individuals. In addition, the OUSL conducts a BSc Honours in Nursing for Diploma holders.

The Post Basic School of Nursing also conducts in-service training programmes for post registered nurses such as: Diploma in Teaching and Supervision (Tutors), Diploma in Ward Management and Supervision (Ward Sisters), Midwifery Training, Intensive Care Nursing, Emergency Care Nursing, Enterostomal Therapy Nursing, Operation Theatre Nursing.

Identified issues within these systems are listed below:

- At present, the Department of Health Services only provides for the awarding of a Diploma in General Nursing;
- A declining trend in applications for the nursing diploma has been observed;
- The current system only produces approximately 300 nursing graduates which is insufficient to meet the current requirement of 3000 nurses per year. it is expected that this requirement will increase to 5000 nurses per year by 2025;
- There is a lack of robust post registration university level programmes and of formalized Continuous Professional Development (CPD) programmes;
- Nursing education does not align with the Sri Lanka Qualification Framework (SLQF).
- There are deficiencies in the curriculum for research, communication, soft skills, modern nursing practices, ethics and patient safety.
- At present there are two pathways within the state university system for practicing nurses to upgrade their diplomas to the degree level:
    - Lateral entry pathway into the nursing degree programs of state universities.
    - BSc Hon. Nursing Degree program in Open University of Sri Lanka (OUSL)
    - The above two pathways provide limited opportunities for practicing registered nurses to complete or continue their education;
- Both graduate nurses and Diploma nurses are employed at the same level by the MOH; and

- Employment in the global market is available only to nurses with graduate level qualifications.

Transforming Nursing Education in Sri Lanka will require that these key issues are addressed to draw more students to the profession, increase the number of nursing graduates per year and to ensure that they receive the best standard of education possible which would allow them to be competitive at the global level.

6.3. Existing Facilities for Nursing Education

- Number of Nursing Schools in the country – 17 (15 Basic Schools, one School for Mental Health and Psychiatric Nursing, one school for Post Basic Nursing Education)
- Current Student population of Nursing Training Schools is approximately 8500 (Actual capacity being 15,000)

Academic Staff

- Number of Tutors – 301
- PhD in Nursing – 01
- MSc in Nursing and other disciplines – 50
- BSc in Nursing- 250

Non-academic staff

- Clerical staff – 85
- House wardens-96
- Drivers - 25
- Health Assistants and Others - 350

Infrastructure Facilities

- Lecture Halls with seating capacity of 15,000
- Auditoriums
- Hostel facilities are available for 50% of student population
- Recreation facilities, cafeteria and transport facilities

Teaching learning resources

- Libraries and clinical skills laboratories
- IT, Internet and online teaching facilities

Clinical Training Facilities

- Government Teaching and General Hospitals

7. HARNESSING INTERNATIONAL OPPORTUNITIES

7.1. Internationally Recognized Nursing Degree Curricula, Policies, and Reforms in selected countries.

The core group reviewed BSc Nursing curricula, Policies, and Reforms in the United Kingdom, Australia, Singapore and the Philippines (among other countries) and identified unique and specific features among those. Each of these Degree Programmes leading to a BSc (Nursing) or a Bachelor of Nursing (BN) have unique features such as:

1. Undergraduates receive teaching and training for a specific job (Nursing Care) in health care delivery systems.
2. They are equipped with the requisite knowledge and skills to practice as a 'Registered Nurse' in a Health Care Delivery Team consisting of different Health Care Professionals.
3. During the period of training, undergraduates acquire specific clinical skills and experience apart from knowledge on Nursing Care.
4. The programmes ensure that Patient Safety, Ethical and Empathetic Practice and Essential Communication Skills are inculcated in students as essential to their serving as a 'Registered Nurse'.
5. Students are also made aware of the accountability and responsibilities of a Registered Nurse within the Health Care Delivery System.
6. They are also made aware of laws, rules and regulations pertaining to the Regulation of Nursing Practice.
7. They are offered opportunities for research collaboration and evidence-based improvement in education and service provision.

In addition, most countries have upgraded their nursing education programs to University Degree level to prepare competent nurses to deliver high standard of health care to the public. In doing so, they have followed the standards of Nursing Education and Nursing Practice to ensure the safety of patients and the public. These practices are enforced by regulatory bodies established in each country. Some examples are listed below:

A. UK – Nursing and Midwifery Council (NMC).
B. Australia – Nursing and Midwifery Board of AHPRA
C. Singapore – Singapore Nursing Board (SNB)
D. Philippines – Board of Nursing of the Professional Regulatory Commission

Details on some of these programmes are provided below:

United Kingdom

The NMC of the United Kingdom periodically change their nursing education standard. One of the most noticeable changes has been the movement out of schools of nursing based on hospital sites, to university-based education. The drive behind this being to make nursing a more academic form of training rather than one that is purely based on an 'apprentice' style of learning. The move to an all-degree profession will present challenges but should be viewed as positive, ensuring that nursing is recognized as a profession rather than the nurses being seen as a 'hand maiden 'to medical staff.

For more information see https://www.nmc.org.uk/standards/standards-for-nurses/

The Philippines

The Philippines Commission of Higher Education has issued policies, standards and guidelines for awarding a Bachelor of Science in nursing. The is to ensure the quality of the nursing graduate, and a degree is conferred only upon completion of a four-year BSN program offered by a college, professional institution or university duly recognized by the Commission on Higher Education. In the Philippines, the BSN degree is equivalent to Level 6 of the Philippine Qualifications Framework.

The BSN program aims to develop a professional nurse who is able to assume entry level positions in health facilities or community settings. A professional nurse is capable of providing safe, humane, quality and holistic care to individuals in varying age, gender and health-illness conditions; healthy or at-risk families; population groups; and community, individually or in collaboration with other health care providers to promote health, prevent illness, restore health, alleviate suffering and provide end of life care.

https://www.prc.gov.ph/nursing

Australia – Nursing Educational Standards

The program of study is delivered at an Australian Qualifications Framework Level 7 or above for the award of a Bachelor's degree, as a minimum. The curriculum guidance documents articulate the nursing and educational philosophies and their practical implementation into the program of study. Teaching and learning reflect contemporary practices in nursing, health and education, and responds to emerging trends based on research, technology and other forms of evidence. The program's content and subject learning outcomes ensure the achievement of the Registered nurse standards for practice. In addition, staff conducting the programme are qualified and experienced to deliver the subjects they teach

For more information see: https://www.anmac.org.au/sites/default/files/documents/registerednurseaccreditationstandards2019.pdf

8. REFORMING THE NURSING EDUCATION SECTOR IN SRI LANKA

8.1. Key Recommendations

In light of the review of the nursing education sector, the core group have agreed that the following recommendations must be prioritized:

- Establish a university for nursing education under the Ministry of Higher Education.
- Acquire all 16 Nursing Training Schools (NTS) as faculties of the proposed university. Buildings currently belonging to nursing training schools should be acquired by the university to provide ample space without further investment on land.
- Annually recruit a minimum of 3,000 nursing students as per the current requirement of the state health sector. This should be further increased on par with the needs of the Sri Lankan private sector and the global requirement.
- Absorb all academic and non- academic staff of the nursing training schools to the proposed university in order to ensure smooth functioning of the proposed University.
- Deploy pragmatic strategies to prevent a dramatic decline of student applications and to ensure sustainability.

- Simultaneously amend prevailing legislations with the establishment of the proposed university to prevent conflicts and disputes and develop a National Policy Framework for nursing education.
- Establish nursing qualification as a 4-year bachelor's degree (Hons) with a minimum of 120 credits in order to maintain compliance with Level 6 of SLQF.
- Make arrangements within the proposed university to upgrade the Diplomas of existing nurses to the Degree level.
- Private sector needs for qualified nurses to be regulated and provided with a registration number by the Sri Lanka Nursing Council (SLNC)

Some of these recommendations have been expanded upon below:

Reform the administration and oversight of Nurses Training

- The Ministry of Health should be represented at all relevant levels of the proposed organizational structure.
- The Ministry of Higher Education is required to ensure that curriculum development and evaluation must adhere to the due processes of a degree awarding status.
    - Training course with quality assurance as per revised University Act and SLQF.
- University Grants Commission is required to
    - Ensure adequate number of undergraduates is enrolled with nursing degree program of the proposed national university of nursing.
    - Oversee Quality Assurance of the undergraduate and postgraduate study courses
    - Coordinate a common component for the final exit examination to enable a common merit list for service employment and placement in the Ministry of Health

Permitting Nursing Training Schools to award a qualification equivalent to a bachelor's degree

- Obtain concurrence from the Ministry of Health to absorb the Nursing Training schools to the proposed University under the Ministry of Higher Education.
- Accordingly, all absorbed nursing schools will be brought under the proposed University of Nursing.
- Appoint a Consultant on contract basis to oversee the entire transformation process.

Note: Currently the Midwifery training programme (18 months duration) is also conducted at the Nursing Training Schools and awarded a Diploma by the Ministry of Health. This programme should be continued for a foreseeable future within the proposed new structure, under the guidance of the Ministry of Health.

Drive Legislative Reforms to Regulate Nursing Education and Practices

- Amend the SLNC act to accommodate the registration of nursing graduates of proposed National Nursing University.
- Ensure that all nursing education institutes comply with the standards prescribed by the SLNC in order to register their graduates or diplomates to practice.
- Re-establish the Sri Lanka Nursing Council as a statutory body with representation of health care and nursing professionals and the public.

Upgrading methodology for registered nurses already qualified from NTS

- Mandate a Top-up Degree programme with module system/ distance learning that also accommodates part time students.
- A new course structure to be established in compliance with requirements for obtaining a SLQF level 6; minimum 120 credits for four years.

Establish and mainstream in-service training

- In service training is a pivotal component of continuous professional development of the Nursing Profession. Ministry of Health currently conducts in -service training programmes for Nurses employed by the Ministry. These programmes should be further developed and continued with the participation of the Ministry of Health and academic staff of the proposed University.
- In service training programmes should also cater to Nurses working in the private sector.
- Advanced in service programmes are proposed for Nurses working in specialized units within the ministry of Health and private sector.
- Where applicable, distance learning models should be promoted for in service training.
- In service training programmes may be linked to Continuous Professional Development (CPD.
- Ministry should encourage and provide facilities (i.e. leave, conference fees etc) to Nursing Officers to attend in Service training programmes.

Ensure that CPD programmes address current needs and demands of the health care system

- With the demographics, epidemiological and other health sector variables affecting more dynamic healthcare services where nursing staff will have to face greater challenges. The current opportunities for CPD programmes are restrictive and need to be revised to ensure that Nurses are equipped to face the challenges of the 21st century.
- There is also a need to expand available CPD Categories to include: clinical specializations, administrative, educational health information systems and personality development programmes, as well as specializations in Oncology Nursing, Pediatric Nursing, Renal Nursing, Palliative care Nursing, Critical Care Nursing, Cardiac Nursing, Trauma and Emergency Nursing, Mental Health Nursing, Nursing Research, Geriatric Nursing, Community health nursing and Nursing Administration.
- Advanced In service programmes are proposed for nurses working in specialized units within the Ministry of Health and private sector where applicable distant learning models should be promoted.

Streamline the use of technology in NTS's and enable digital/virtual learning opportunities

- Due to the demand for nursing care practicing nurses have hardly any time to enroll in full time programmes. Therefore, it is conducive to conduct part time programs where nurses could work on CPD at their own pace.
- Providing access to virtual classrooms and digital learning tools will help eliminate geographical, administrative and professional barriers to education and allow the opportunity for all nursing professionals to work and study.
- This could be facilitated by promoting E-learning; improving accessibility to modern educational programs; evidence-based practice; student centric learning; creating enjoyable and effective learning environments

for students; quality teaching environments for nursing tutors; providing cost effective and environmentally friendly solution.

Improve opportunities for the professional development of Nurses

- Provide access to a Post Graduate Certificate that will allow for the development of skills in nursing while employed.
- Establish a Post Graduate Diploma that will provide information and training on modern trends in nursing such as reflective practice, collaborative learning, and activity-based learning
- Establish a Masters qualification in Nursing and/or Public Health,
- Establish a Doctorate in Nursing on par with international standards

Amend the enrolment processes for students that wish to follow a Nursing Education

- Develop a standard entry criterion in collaboration with the UGC

Develop a Communications Strategy to convey these changes

Following institutions can be consulted in establishing a proper communication process for transforming nursing education: the Ministry of Health, the WHO, the International Council of Nurses, Nurses Unions, Universities, Nursing Training Schools, the Sri Lanka Medical Association and the Sri Lanka Nursing Council.

Changes could be communicated via MOH publications, Acts and Gazette notification

ANNEXURE I

Curriculum Structure for the Basic Nursing Diploma Programme

Total Requirement	Hours		Credits*	
	5,444.0		176.4	
	Theory	**Laboratory/ Practice**	**Theory**	**Laboratory / Practice**
Total	**1,713.0**	**3,731.0**	**114.2**	**62.2**
1. General Education	190.0		12.7	0.0
English	100.0		6.7	
Psychology	45.0		3.0	
Sociology	45.0		3.0	
2. Field of Specialization	1,523.0	3,731.0	101.5	62.2
2.1 Core courses	450.0	0.0	30.0	0.0
Anatomy & Physiology	140.0		9.3	
Microbiology	60.0		4.0	
Pathology	20.0		1.3	
Pharmacology I	45.0		3.0	
Pharmacology II	29.0		1.9	
Nutrition	96.0		6.4	
General Science	60.0		4.0	
2.2 Major requirement	1,073.0	3,731.0	71.5	62.2
Community Health	114.0		7.6	
Community health practice		168.0		2.8
First Aid	22.0		1.5	
First aid practice		92.0		1.5
Fundamental of nursing	223.0		14.9	
Fundamental nursing practice		932.6		15.5
Gynaecological nursing	25.0		1.7	
Gynaecological nursing practice		104.6		1.7
History of nursing	50.0		3.3	
Medical – Surgical Nursing	350.0		23.3	
Medical surgical nursing practice		1463.7		24.4
Mental health and psychiatric nursing	85.0		5.7	
Mental health and psychiatric nursing practice		125.0		2.1
Obstetric Nursing	40.0		2.7	
Obstetric nursing practice		167.3		2.8
Pediatric nursing	110.0		7.3	
Paediatrics practice		460.0		7.7
Professional adjustment	22.0		1.5	
Ward management	32.0		2.1	
Ward management practice		133.8		2.2
Workshop		84.0		1.4
3. Free elective	0.0		0.0	0.0

*Credit system is compared here for the future program adjustment. This trimester credit system refers that one credit of lecture or theory hours equal to 1 hour per week, and one credit of practice or laboratory hours equal to 4 hour per week.

ANNEXURE II

Study Programme for the Three-Year Period

First Year

Subjects	Hours
Fundamental of nursing	(T+P) 223+712 = 935935
First Aid	22
History of nursing	50
Anatomy & Physiology	140
Microbiology	60
Psychology	45
Nursing ethics and Professional adjustment	22
Sociology	45
Pharmacology Part I & II	74
English	100
General Science	60
Nutrition	96
Pathology	20

Second Year

Subject	Hours
Fundamental of nursing (Practice)	220
Medical Surgical Nursing	350s
Medical Surgical Nursing Practice	1463.7 (1st& 2nd year)
Community Health	114
First Aid (Practice)	92
Gynecological Nursing	25
Gynecological Nursing Practice	104.6
Pediatric Nursing	110
Pediatric Nursing Practice	460
Obstetric Nursing	40
Obstetric Nursing Practice	167.3
Obstetric Nursing Practice	167.3

Third Year

Subject	Hours
Medical Surgical Nursing (practice)	1463.7 (2nd& 3rd Year)
Ward Management	32
Ward management Practice	133.8
Pediatric Nursing Practice	460 (2nd& 3rd Year)
Mental Health and Psychiatric Nursing	85
Mental Health and Psychiatric Nursing Practice	125
Research	84
Community Health Nursing Practice	168