

# VIDYA

The Quarterly Newsletter of the National Science Foundation



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## Dr Thamara F. Dias appointed as the Acting Director General of the National Science Foundation



Dr Thamara F. Dias assumed duties as the Acting Director General (ADG) on 1<sup>st</sup> June 2020. She started her career at the NSF as a Scientific Officer in 1995 and has more than 25 years' experience. She served as the Head of the Technology Division from 2008 to 2016. In August 2016 Dr. Dias was appointed to cover up in the post of the Director General, which post she held until October 2017. Subsequently, she was appointed as the Additional Director (AD) of the NSF and currently holds both the ADG and AD posts.

During her memorable journey at the NSF, Dr Dias has carried out diverse activities for the betterment of the Institution. She was the founder and the first editor of the "VIDYA" newsletter. Until her recent appointment as the ADG, she served as the Editor-in-Chief of the VIDYA. She has represented the NSF as well as the country at many local and international events.

### NSF bade farewell to.....



**Dr A. M. Mubarak**  
Former Director/ CEO/  
Industrial Technology  
Institute  
**Chairman**  
(February – December 2019)



**Prof. Ananda Jayawardane**  
Senior Professor in Civil  
Engineering, and former Vice  
Chancellor, University of Moratuwa  
**Director General**  
(January 2018 – December 2019)



**Mrs Nazeema Ahamed**  
Director Planning of the  
State Ministry of Technology  
and Innovation  
**Acting Director General**  
(January – May 2020)

**Thank you very much for the contribution you made to take NSF to greater heights.**

## Glimpse of the Future..... (Two New Initiatives)

### National Conference on “COVID - 19: Impact, Mitigation, Opportunities and Building Resilience” (Theme: “From Adversity to Serendipity”)

It is well known that when compared with many developed countries, Sri Lanka has made great strides in combating COVID-19 and keeping the mortality rate low.

In the course of this outstanding achievement, a wide range of lessons were learnt, many best practices identified, and new knowledge, insights, competencies and experiences were gained. These have to be further studied, refined, analyzed, interpreted and documented for the benefit of posterity expeditiously, lest a lot of the valuable information gathered, and the knowledge gained would be lost forever. Against this backdrop, the NSF plans to conduct a 2-day national conference titled “COVID-19: Impact, Mitigation, Opportunities and Building Resilience” under the theme “From Adversity to Serendipity” on 27<sup>th</sup>-28<sup>th</sup> January 2021. It aims at bringing all the key players of the relevant public and private sector institutions under one roof to deliberate and reflect on the above aspects of the pandemic and facilitate the building up of a robust and resilient community and economy in Sri Lanka. The proceedings of the conference will be published in a landmark treatise which will be valuable not only to Sri Lanka, but also to the rest of the world in coping with, and mitigating the impact of such pandemics in the future.

URL: <https://bit.ly/3bjORUY>

### Digital Platform -Expanding the horizons and enabling STI cooperation beyond boundaries



**National Conference on**  
**“COVID 19: Impact, Mitigation, Opportunities and Building Resilience”**  
Date: 27-28 January 2021  
Theme: “From Adversity to Serendipity”

**About the Event**  
The global mortality rate of COVID-19 currently lies between 1%, which is much lower than those of SARS (9-10%), MERS (9-50%) and Ebola (2-90%). However, it is more infectious and diffuse than other pandemics in terms of the infection period, transmissibility, clinical severity and the extent of community spread. When compared with many developed countries, Sri Lanka has made great strides in combating COVID-19 and keeping the mortality rate low. For instance, the case fatality rate (ratio of confirmed deaths to confirmed cases) thus far observed in Sri Lanka is only about 0.4% as against 1.4% in France, 14.5% in Italy, 40% in Canada, 25% in China, 25% in Cuba, 24% in India and 2.1% in S. Korea as reported by WHO on 14/07/2020.

Therefore, the achievements of Sri Lanka are commendable in a global context and to among the few countries that effectively managed COVID-19. They were made possible by a combination of the relevant authorities fulfilling their mission with dedication, devotion and determination and the wisdom and effective leadership of the country as a whole when the whole globe was shaken by an unprecedented pandemic.

In the course of combating COVID-19, a wide range of lessons were learnt, many best practices were identified, and new knowledge, insights, competencies and experiences were gained. They ought to be further studied, refined, analyzed, interpreted and documented for the benefit of posterity. They should be disseminated widely for a lot of the valuable information gathered, and the knowledge gained is lost forever.

Against this backdrop, the NSF will conduct a 2-day national conference titled “COVID-19: Impact, Mitigation, Opportunities and Building Resilience” under the theme “From Adversity to Serendipity” on January 2021. It aims at bringing all the key players of the relevant public and private sector institutions under one roof to deliberate and reflect on the above aspects of the pandemic so as to build a robust and resilient community and economy in Sri Lanka.

The proceedings of the conference will be edited and published in a landmark treatise which will be valuable not only to Sri Lanka, but also to the rest of the world in coping with, and mitigating the impact of, such pandemics in the future.

**General Objective**  
To produce a comprehensive and authoritative scholarly volume on how to manage a pandemic in numerous its economic, social and psychological impact.

**Specific Objectives**  
1. To collect, collate, review, analyze, synthesize, and document information and data gathered on important aspects of the impact of and recovery from COVID-19.  
2. To document lessons learnt, best practices and strategies identified, innovations adopted, and knowledge and experience gained in combating the pandemic, mitigating its impact and building resilience.  
3. To determine and address needs in human capital development and capacity building in data, program, manage and research in pandemic situations and health resilience.  
4. To ascertain and address logistical deficiencies and inadequacies in infrastructure and competencies for developing effective and robust relief operations and supply chains in crisis situations.  
5. To learn from failures and successes of other countries in combating COVID-19.  
6. To formulate policies to combat any future epidemics and pandemics effectively with minimal impact and improved resilience based on lessons learnt.

**Salient Features**  
• Leading scientists from North and South America, Europe, Africa, Asia and Oceania will join online to share their knowledge and experience.  
• Renowned outstanding scientists and professionals in relevant fields in Sri Lanka will be kind invited to contribute to the conference and the resulting volume.  
• Conference proceedings will be published within 30 days after the event.

**Key Output**  
A landmark treatise based on “Management of pandemics with minimal impact” including a “Lessons” component with special focus on Sri Lanka, but with contributions from the key regions in the world, making the product globally important and relevant.

**Key Dates**  
• Expression of interest: 05 August 2020  
• Submission of extended abstracts: 20 August 2020  
• Confirmation of acceptance: 05 September 2020  
• Submission of full paper: 25 November 2020  
• Submission of reviewers’ comments: 25 December 2020  
• Submission of revised paper: 15 January 2021

**Call for contributions**  
In addition to hand-picked leading, established national research groups in respective areas to contribute, the organizing committee invites and encourages research teams, preferably of cross-disciplinary and inter-disciplinary nature to submit original research relevant to the scope and objectives of the event.

**Conference Tracks**  
Health, Resilience, Society, Economy, Governance, Cross-cutting themes: Governance, Research, inventions, and innovations, Building a robust and resilient supply chain, Mental health and well-being, Natural and built environment.

**Abstracts and papers should be submitted online and further information is available on the conference website.**

<https://covidcon.nsf.gov.lk> | [covidcon@nsf.gov.lk](mailto:covidcon@nsf.gov.lk) | Standard: +94 215 968 022 | Conference: +94 215 912 277 | Resilient: +94 215 914 484



With the global knowledge-based economy, countries are increasingly relying on science and technology (S&T) skills and infrastructure for competitive advantage. In this context, physical assets have been replaced with intellectual assets where science, technology and innovation play a key role. The number of researchers (full-time equivalent) per million population in Sri Lanka is 106 (Sri Lanka Science, Technology and Innovation Statistical Handbook, 2015, National Science Foundation). This is very low when compared with developed country statistics of approximately 4000 researchers per million population.

S&T expatriate networks have become a powerful instrument in raising intellectual capital that has enabled the developing countries to strategically harness the expatriate scientists and technologists for national development. Therefore, increasing the number of researchers in Sri Lanka is a high priority. In order to achieve this goal, the NSF has taken the initiative to establish a digital platform to facilitate, expand and strengthen the network of researchers in Sri Lanka and expatriates. A database of Sri Lankan researchers and expatriates will also be developed. This digital platform will be an effective short-term strategy and alternative to enhance critical mass of S&T personnel and harness the untapped talent pool from around the world at a minimal cost, thereby contributing to socio-economic development through enhanced cross border scientific cooperation and research collaboration.

URL: <https://bit.ly/2EPfpBB>

**A clarion call to Sri Lankan expatriates abroad !**

A great opportunity to be engaged with the motherland in a mutually rewarding and reinforcing manner

Let us join the digital platform and be a dynamic force and strategic partner in national development

Visit: NSF website <http://www.nsf.gov.lk> for details

Chairman  
National Science Foundation  
Sri Lanka  
Email: [chm@nsf.gov.lk](mailto:chm@nsf.gov.lk)

## COVID-19 Global Pandemic

### A helping hand in time of need..... NSF initiatives towards combating and mitigating

The Coronavirus disease (COVID-19) was declared a global pandemic by the World Health Organization on 11<sup>th</sup> March 2020. This pandemic has made the whole world a different place with millions of people affected and thousands dying each day.

NSF is taking various steps to facilitate the development of local technologies, innovations, promoting research in COVID -19 related areas, increasing agriculture-based products and improving other technologies by using new ICT etc.

In this time of need, inventors and researchers were in the forefront to produce locally developed technological innovations viz, production of ICU beds, manufacturing ventilators, remote patient-monitoring systems, robots. The NSF facilitated their activities by providing relevant information enabling them to accelerate the work.



### One-Stop information hub

NSF hosted the “COVID-19 Information Hub” on the NSF website with continual updating. This hub provides latest information on COVID-19 to all spheres of the society as all official websites such as the WHO, Johns Hopkins University, Epidemiology Unit of Ministry of Health, Sri Lanka that provide both global and local scenario are linked to this. In addition, information on both international and local updates on COVID-19, cutting-edge research, expert reviews, information on early detection & test methods, preventive measures & health interventions, managing epidemics, indigenous knowledge, statistics, community engagement, threat of re-emergence & the second wave and lessons from other countries can be referred, at this “one-stop information hub.”



COVID -19  
information  
hub on  
NSF website



## Some completed and ongoing NSF activities:

- Providing information on RT-PCR machines in workable condition funded under the NSF Research Equipment Grant Scheme to support Corona virus testing.
- Compiling information on Sri Lankan expatriates conducting Corona virus related research/work.
- Designing, developing and posting leaflets and video clips in social media to educate school children and the general public.
- Initiating a special issue of “Vidurava.”
- Planning for a landmark National Conference to be held in January 2021.
- Opening a Call for proposals for research as well as technology development and transfer, to address high-priority needs in the health and agriculture (including fisheries) sectors, the latter being closely connected to food security. Proposals were expected to address high-priority needs and concerns in the above sectors with the advent of COVID-19.

## Increasing awareness and science literacy

NSF is also actively developing programmes to create awareness and improving science literacy of the community etc. The Science Popularization Division of the NSF has initiated various programmes to engage children and adults in productive activities to minimize the stress they are facing during this traumatic time. Accordingly, following activities are in progress:

- Creating educational and awareness programmes for the community on COVID - 19
- Research Projects Competition among school students (grades 9-12)
- Conducting various science and aesthetic-based competitions such as science essay, short science drama, role play, song, virindu, hand-painted posters and digital story telling competition for students to engage themselves while staying at home
- Engaging primary school students in nature exploring activities through Kids Naturalist programme
- Engaging undergraduates in science and technology-based competitions



## New culture in research funding..... Open Science

COVID -19 has placed science, science funding and policy in the public eye in ways that are unprecedented in our lifetimes. It has shown that the science funders, science and technology institutions, scientists of both private and public spheres across the globe have to think differently about improving collaboration and coordinating efforts.

Addressing the issue of constraints to research without data and access to data, some funders moved forward to support open science, identified as the key solution for this. e.g. the European Union has created a COVID -19 research data platform enabling accessibility and interoperability of data on various disciplines. More stringent conditions were imposed on COVID-related grants and requested to make their data, open within a month of collection, interoperable, and reusable in a short time and to have data management plans. EU has also undersigned the statement on sharing research data and findings relevant to the outbreak, initiated by the Wellcome Trust and along with 14 other countries adhered to the open letter initiated by the Office of Science and Technology for the President (OSTP), calling on publishers to open up their publications / their journals during the pandemic. Many funding agencies had promptly responded to the emergency by rapid grant calls to facilitate research and innovation.

Current System (dominant)		Open Science	
Rewarding individual competing scientists gaining scientific prestige		Rewarding collaboration and sharing to achieve societal impact (e.g. Covid-19)	
Publish as much and as fast as possible ( <i>publish or perish!</i> )		Share knowledge/data as early and as openly as possible	
Excellence defined largely on the basis of <i>where</i> scientists publish		Composite definition of excellence	
Incentivises researchers to produce specific outputs (mainly publications)	Use of quantitative metrics	Incentivises researchers to share, collaborate, increase quality and impact; while considering diversity of outputs and research cultures	Use of qualitative and quantitative metrics

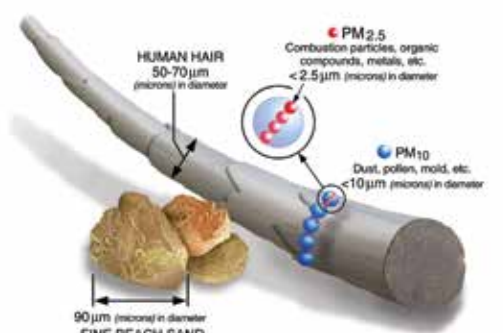
(This article is based on a webinar conducted by the International Science Council on 26<sup>th</sup> June 2020 titled 'The role of Science and Science Funders in the time of the COVID -19 crisis').



## NSF Grant Outputs

### COVID - 19 paves the way for cleaner atmosphere: Case of Kandy and Colombo

Under measures to control the spread of coronavirus, the world became a more “slowed down” place with curfew imposed, industries and factories closed, social movement restricted and transportation brought to a halt. According to a global report, road and aviation transport was almost 50% and 60% below the 2019 average, respectively. As a result air quality throughout the world has improved considerably. Air pollution in the cities are mainly coming out of vehicles and can mainly be divided into two components, that is, gas and particles. Gases include, CO<sub>2</sub>, CO, oxides of Nitrogen, oxides of Sulphur and many more. Particle air pollution is mainly caused by tiny particles which are less than 2.5 µg in diameter, commonly known as PM<sub>2.5</sub>. These tiny particles, invisible to naked eye and much smaller than a human hair are capable of going deep into lungs and causing diseases.



Size comparison of particles compared to a human hair

A research project provided a unique opportunity to understand the air pollution when there are no major human activities taking place. A larger reduction of CO, around 50% in Colombo and 36% in Kandy was observed in both cities.

#### Reduction of particulate matter and carbon monoxide air pollution in Colombo and Kandy before and during Curfew.

	Before Curfew	During Curfew	Percentage Decrease
<b>Colombo</b>			
PM <sub>2.5</sub> (micrograms per cu m)			
Daily Averages	47.3	31.1	34
Daytime Averages	50.1	31.5	37
CO (ppm)			
Daily Averages	0.72	0.37	49
Daytime Averages	0.77	0.37	52

	Before Curfew	During Curfew	Percentage Decrease
<b>Kandy</b>			
PM <sub>2.5</sub> (micrograms per cu m)			
Daily Averages	41.4	31.0	25
Daytime Averages	41.1	32.2	22
CO (ppm)			
Daily Averages	55.7	35.9	36
Daytime Averages	53.7	37.2	31

The benefits of reduction of air pollution are immense. Air pollution by small particles can cause severe health problems to human, mainly diseases in the respiratory and cardiovascular systems. The effects are much severe when babies and young children are exposed. The interim findings of this ongoing research project reveals that the air pollution in Kandy is mainly caused by vehicles. There is an urgent need for policies and legislation to reduce vehicular traffic and thereby harmful emission, so that not only the current generation, but future generations as well would enjoy enormous health benefits.

#### Investigators

*Dr Gayan Bowatte, Dept. of Basic Sciences, Faculty of Allied Health Sciences, University of Peradeniya.*

*Dr Sachith P Abeysundara, Dept. of Statistics & Computer Science, Faculty of Science, University of Peradeniya.*

*Prof. Rohan Weerasooriya, National Institute of Fundamental Studies  
Research Student : Mr S M D M C Senarathna, Grant No : RG/2019/BS/01*

## NSF Supports health informatics-infused digital era for effective decision making

Fragmented health information architecture and poor use of health information in policy making had been identified as major setbacks in evidence-based decision making in Sri Lankan health system. Most developed and developing countries have already accomplished computerization of health systems as the elementary step of their health reform agendas. However, Sri Lanka is still at an early stage of introducing ICT to the health sector with several emerging clinical and public health information system initiatives.

A project funded by the NSF under the Research Program on Health Science (RPHS) was aimed at revamping and utilizing such existing information and communication infrastructure: Hospital Information System (HIS), Electronic Morbidity and Mortality System (eIMMR) and National Cancer Registry (NCR) situated at National Cancer Institute, Maharagama, and Cancer Control Program, Narahenpita.

Another project was initiated for transforming present paper-based cancer registry to a live web-based cancer information system, which is now active and thriving at National Intensive Care Surveillance Unit (NICS). Improved, interoperable National Cancer Registry and Cancer Information System enabling health planning, benchmarking of units, assessing quality of life and health research and evidence-based decision making from both administrative and academic perspectives are the outcomes from this project.



### *Inter-operable Hospital Information Management System developed at National Cancer hospital*

This is the newest addition to the series of similar registries adapted to the mobile platform in Sri Lanka critical care registry, renal registry, and rabies post exposure prophylaxis registry, for ease of use.

#### **Principal Investigators**

*Dr. Pubudu De Silva  
National Intensive Care Surveillance  
Ministry of Health*

*Prof. Vajira Dissanayake  
Human Genetics Unit  
Faculty of Medicine  
University of Colombo*

*Grant No : RPHS/2016/C 01*

*Grant No : RPHS/2016/C/02*



## Discovering unexplored jellyfish resource of coastal waters of Sri Lanka

Globally there are large numbers of jellyfish in the ocean belonging to different species. Jellyfish have several ecological and societal importance and play a significant part in the ecosystem and oceanic food chain. They are a source of food for some aquatic species such as fish and turtles, and humans. In addition, they provide habitat for many fish species and are also capable of protecting small fish from predators. Jellyfish are one of the untapped marine fishery resources of Sri Lanka. Although in South-East countries, jellyfish is a popular delicacy, it is not so in Sri Lanka. Nevertheless, in 2007/2008, it turned out to be a multi-million-dollar export-oriented seafood market trade.

Identifying the gap in knowledge, NSF funded a research project to carry out the first ever comprehensive study on jellyfish resources in Sri Lankan waters.

Major findings of this study are:

- 43 jellyfish species reported; 23 species reported for the first time from Sri Lankan waters; 8 newly-identified species.
- Distribution and abundance of each species mapped with respect to different seasons.
- With the records of previous studies, a check list of 150 species from Sri Lankan waters developed.



*Upside-down jellyfish found in Jaffna Peninsula (as a good bio-indicator for water pollution and as an ornamental species)*



*A commonly found hazardous jellyfish species (Portuguese man of war) along the southwest and northeast coasts during respective monsoonal periods*



*A potentially exportable species (Sand-type jellyfish) for food*



*An ornamentally valuable species (Australian spotted jellyfish) found in northeast coast of the country*

### Investigator

*Dr Dileepa de Croos of Department of Aquaculture & Fisheries, University of Wayamba (Mr Krishan Karunarathne- Research Student)*

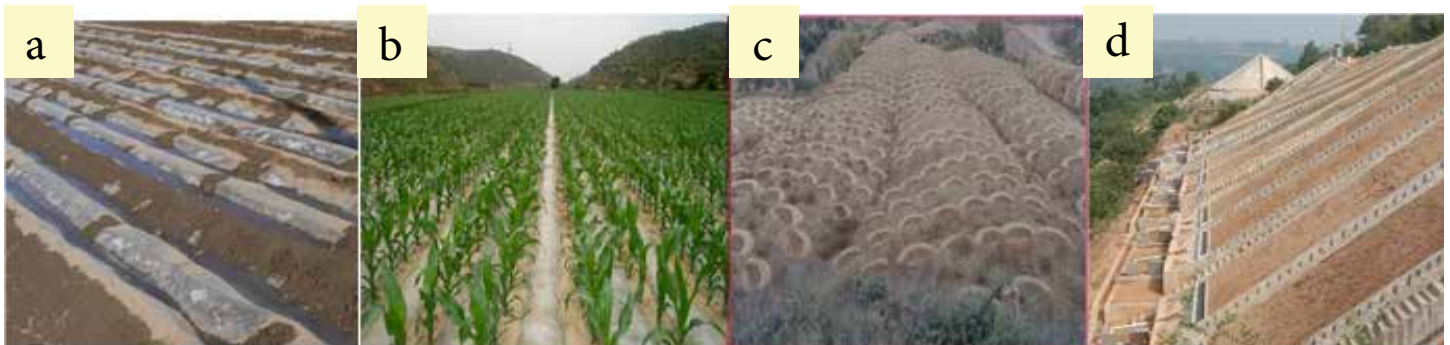
*Grant No : RG/2016/OMR/01*

## Exposure Beyond Boundaries..... Overseas Special Training Programme (OSTP) Grant Scheme

### New technology to enhance agricultural productivity in arid / semi arid lands

Soil and water are vital for the ecological ecosystem, hence soil and water conservation are significant to ameliorate the quality of life of people inhabiting rural and urban communities. Improper water management in agricultural drylands tends to cause strong soil erosion leading to land degradation, ultimately affecting agriculture and both water & food security. Moreover, expansion of large-scale commercial agriculture in Sri Lanka has caused changes in land use pattern reducing arability of lands. Continuously changing climate patterns have aggravated the challenges in dryland farming in Sri Lanka.

Identifying the timely importance of mitigating these issues, NSF awarded a grant under the Overseas Special Training Programme (OSTP) to Prof. D. A. L. Leelamanie and Mr U. I. Samarawickrama, University of Ruhuna enabling them to visit China for training on innovative tools being used in this emerging field. As the follow up to the training, the two grantees have made their recommendations to adapt the technology to Sri Lanka.



Figures (a) & (b) Double ridges and furrows mulched with plastic film, (c) Fish scale method to collect area runoff and sediment, (d) Erosion estimation model

## NSF Publications

**Sri Lanka Journal of Social Sciences [indexed in Emerging Sources Citation Index of Clarivate Analytics]  
Volume 43 Issue 01 (June 2020)**

This issue contains an eye-opening Editorial from Co-Editor, Professor Emeritus Kalinga Tudor Silva, drawing attention to how research and policy formulation in the field of social sciences will change in the face of the COVID-19 pandemic.

The issue also includes one Review Article, two Research Articles and one Book Review.

The Review Article by Fazeeha Azmi Ibrahim, 'Between the sea and the land: small-scale fishers and multiple vulnerabilities' focuses on the impact of recent economic, political and policy changes on the small-scale fisheries sector of Sri Lanka.



The two Research Articles titled ‘*An analytical study of child labour in the agriculture sector of the rural areas of central Punjab, Pakistan*’ by Shabbir Ahmad, Wu Huifang, Saira Akhtar, Sobia Maqsood and Shakeel Imran and ‘*Job satisfaction of teachers working in the most difficult schools, with special reference to Puttalam Education Zone, Sri Lanka*’ by Muddarage Lakshmi Hemamala Sumanasena, Fareed Mohamed Nawastheen and Prabha Ransi Jayawardena discusses the major reasons and economic factors behind the existence of child labour and actions required for the betterment of vulnerable children and the relationship between job satisfaction and intrinsic and extrinsic factors of teachers in some of the most difficult schools in Sri Lanka, respectively.

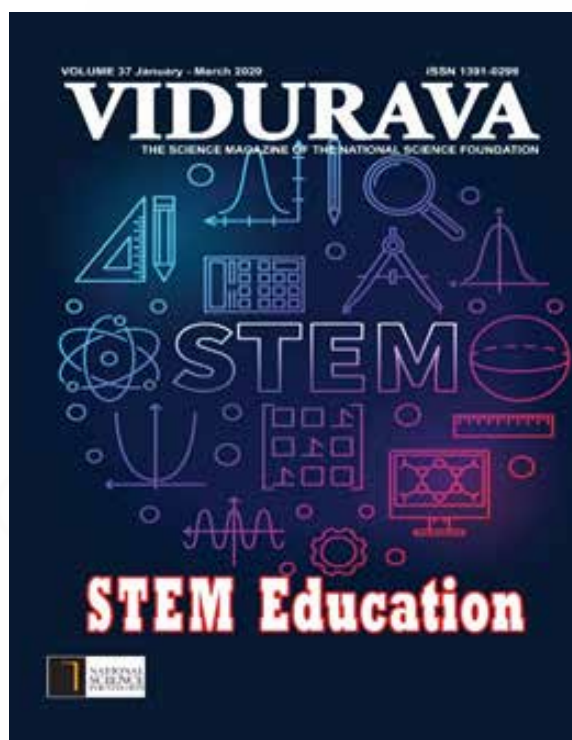
The issue also contains a Book Review on ‘*Competing in Customer Driven Markets; A Holistic Approach*’ authored by Amila Jayarathne and a correspondence on late Professor Emeritus Swarna Jayaweera, a key figure in the field of Education in Sri Lanka.

URL: <https://sljss.sljol.info/issue/archive/>

## Vidurava issue on “STEM” Education

Volume 37, issue 1 of Vidurava Science Magazine was published in both English and Sinhala languages. The issue contained the articles titled, ‘*STEM (STEAM) Evolution – Understanding the Foundation of World Economic Development*’ by Dr. Chandra Embuldeniya; ‘*Implementation of STEM education in schools*’ by Prof. Sunethra Karunaratne; ‘*Identify STEM education and activities for information technology*’ by Mr Vipula Kulathunga; ‘*How could STEM educational experiences be achieved through the existing science curriculum*’ by Mr Asoka De Silva ; ‘*STEM Education through the Finland Experience*’ by Ms B.W.G. Dilhani. The issue also contained an article on Nobel Prize Winners of 2019.

URL: <http://www.nsf.ac.lk/index.php/vidurawa-2020-january-english>



# Join with the STMIS

Be a member of Sri Lanka's widest network of S&T Personnel Platform

The National Science Foundation (NSF), is mandated to maintain a current register of scientific and technical personnel in Sri Lanka and developed this System way back in 2004. We are delighted to inform you that the Science & Technology Management Information System (STMIS) online access was launched in 2019. We invite you to register with the STMIS and be a privileged member.

## Who can get the registration?

- Any individual with a basic degree in science including social sciences working in a field related to science and technology

## Why you should maintain an updated profile in the STMIS?

- Get more visibility to your work as policy making bodies will harness the latest information from this
- Get updates on important events and opportunities in the field
- A pre - requisite to apply for grants and other services offered by NSF

## For more details:

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