

Annual Report

2014 - 2015



Manipur Science & Technology Council
Central Jail Road, Imphal-795001

Website: <http://mastec.nic.in> email: mastec@nic.in

Annual Report 2014 - 2015
MANIPUR SCIENCE & TECHNOLOGY COUNCIL

CONTENTS

1.0	Background	1
1.1	Objectives of the Council	1
1.2	Organisation	2
1.3	Existing Staff	3-4
2.0	Short-term Activities including Science Popularisation	4
2.1	Observation of World Intellectual Property Day	4
2.2	Science Meet 2014	4-8
2.3	Dr. Ibeyaima Innovation Award	8
2.4	Contact Programme for Talented Girls School Students of Manipur	9-12
2.5	Contact Programme for Talented Boys School Students of Manipur	12-16
2.6	Millennium Science Lecture	17
2.7	Celebration of National Mathematics Day	17
2.8	Regional Training Workshop on Science Journalism / Writing For North Eastern States	17-20
2.9	Celebration of National Science Day	20-21
2.10	Science Communicator Award	
2.11	Resource Persons Training Workshop on Micro-organism	21-22
3.0	Projects	
3.1	Community Pond based Safe drinking Water System (BARC UF technology)	22
3.2	Geological and Geotechnical Investigation of one site located between Noney-Nungba along NH-37 & suggest remedial measures	23
3.3	MASTEC – ICAR joint venture project on pisciculture and its allied activities for socio-economic development in Manipur	23-24
3.4	Patent Information Centre (PIC)	24- 25
3.5	Intellectual Property Facilitating Centre (IPFC)	25
3.6	MASTEC – CAU (Central Agricultural University) joint venture project on Generation of Pony Based Animal Energy for utilisation in agricultural development of Manipur State	25
3.7	Manipur Science Aquarium	26 - 27
3.8	Tricycle Paddy Thresher	27 -28
4.0	Meeting attended by Officers	28
5.0	Visiting Scientists to MASTEC	29-30
6.0	Library	30

1.0 Background

The Manipur Science & Technology Council (MASTEC) formerly, State Council of Science, Technology and Environment, Manipur was set up in the year 1985 with the initiatives from the Department of Science and Technology, Government of Manipur. The Chief Minister, Manipur and the Minister in charge (S&T), Manipur are the Chairman and the Vice Chairman of the Governing Body of the Council. The Secretary /Commissioner(S&T), Government of Manipur is the Member Secretary of the Council. The Council got registered as an autonomous organisation of the Department of Science & Technology, Government of Manipur in January 1996 under the Manipur Societies Registration Act, 1989 subsequent to a decision of the state cabinet.

The autonomous Council is served by its own Secretariat of twenty manpower supported by the Department of Science and Technology (DST), Government of India. The Council Secretariat operates with the grants received from DST, Government of India, DST, Government of Manipur and the funds received from various agencies through projects and programmes. The autonomous Council works in co-ordination with the State Directorate of S&T in various areas of activities.

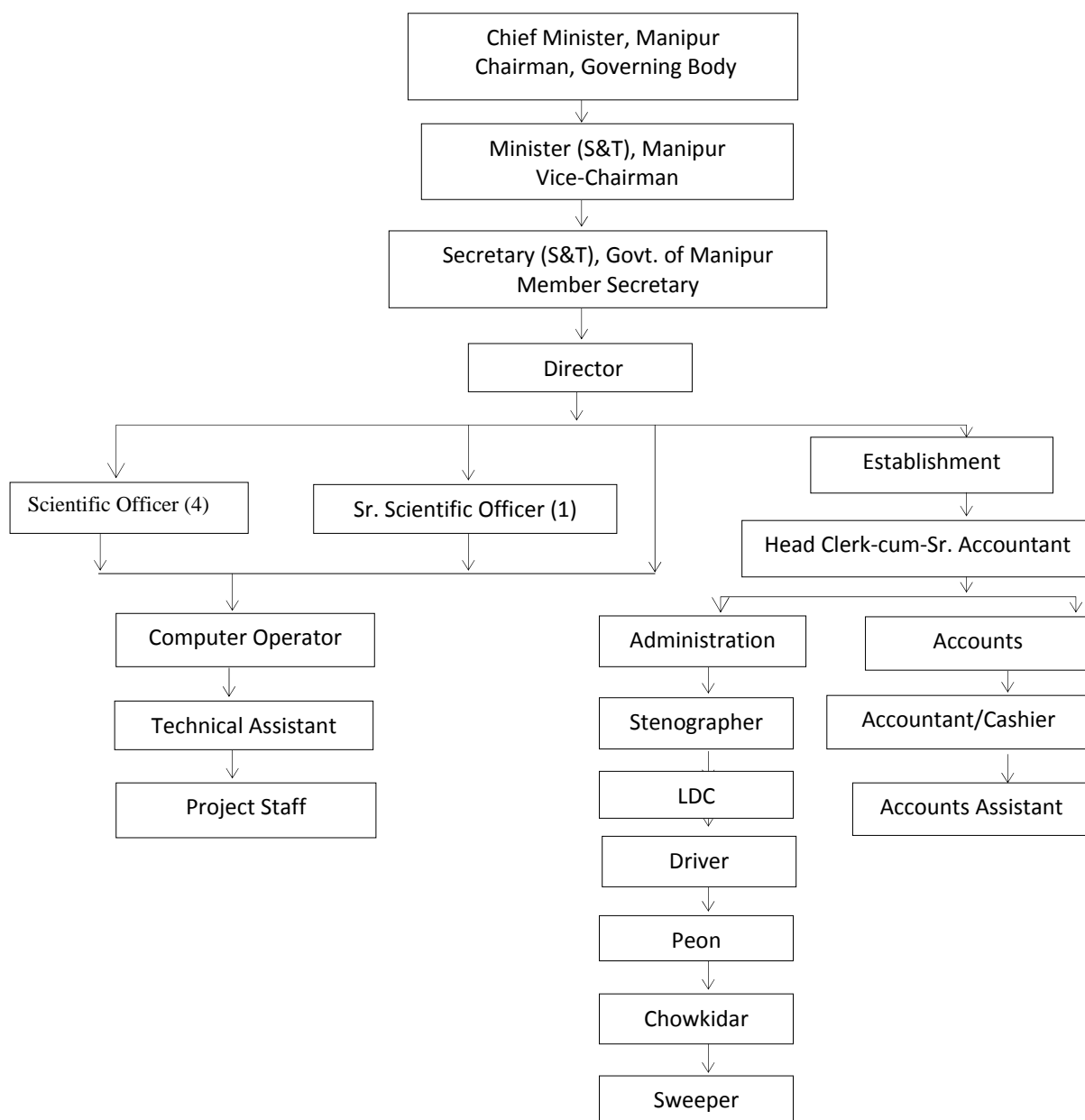
1.1 Objectives of the Council

- To identify areas in which Science, Technology and Environment can be utilised for the achievement of the Socio-economic objectives of the State and in particular, tackling the problems of backwardness and underprivileged sections of Society;
- To advise on policies and measures necessary to promote Science, Technology and Environment and their utilisation for achievement of socio-economic objectives;
- To initiate, support, promote and co-ordinate Research Design and Development projects and programmes, including demonstration projects which are likely to be relevant to the problems, surveys and optimum utilisation of natural resources of the State;
- To promote and undertake activities for the popularisation of Science and Technology and the spread of a Scientific Temper and attitude among the people of the State;
- To supplement and complement the ongoing technical efforts of the State Government;
- To interact with other State, National and International Science and Technology bodies having similar or related objectives;
- To identify priority areas of Science, Technology & Environmental need for long term development of the State;
- To safeguard and promote the ecology and environment in the State of Manipur;
- To utilise Remote Sensing Techniques for planning, implementation and monitoring of development programmes with S&T inputs and to promote and support the activities of the Remote Sensing Centre;
- To promote, support and undertake the application of renewable sources of energy for the benefit of the people;
- To accept donations, raise subscriptions and receive grants, loans and subsidies from Government of India, Government of Manipur and other supportive agencies in India and abroad and to invest the resources towards the achievement of the objectives of the Council.

1.2 Organisation

The Council has a Governing Body consisting of a wide distribution of membership having expertise in various fields, with the Chief Minister as the Chairman, and the Minister in charge, S&T, Manipur as the Vice Chairman. At present there are 25 employees (including project staff) in the Council. The Council has an Executive Committee to assist the activities towards achieving the objectives of the Council. The Vice-Chairman of the Governing Body of the Council heads the Executive Committee as its Chairman. The Secretary, S&T, Government of Manipur is the Member Secretary of the Council. The Member Secretary is the Chief Executive of the Council Secretariat (See Organisation Chart)

Organisation Chart



1.3 Existing Staff

Scientific Staff:

Sl. No	Name	Qualification	Designation
1.	Th. Surendranath Singh	M.Sc., PGDCA, LLB	Director
2.	Dr. L. Dinachandra Singh	M.Sc., PGDRS, Ph.D.	Sr. Scientific Officer
3.	Dr. L. Minaketan Singh	M.Sc., PGDRS, Ph.D., Foundation Training of Scientists (IIPA)	Scientific Officer
4.	Kh. Rakesh	M.Sc.	Scientific Officer
5.	Er. Ch. Sarat Singh	B.Tech, M.Tech.	Scientific Officer
6.	Dr. R.K. Pritamjit Singh	M.Sc., Ph.D.	Scientific Officer

Technical Staff :

7.	Dr. Ch. Shivaji	M.Sc., PGDCA, Ph.D.	Computer Operator
8.	Mrs H. Binodini Devi	B.Sc.	Technical Assistant
9.	Y. Shyamsunder Singh	B.Sc., LLB	Technical Assistant

Ministerial Staff:

10.	K. Nara Singh	B.A.	Sr. Accountant cum Head clerk
11.	Mrs R.K. Bhanisana Devi	B.Sc.	Accountant
12.	H. Thangthianmang	B.A	L.D.C.
13.	A. Tombi Devi	B.A.	Stenographer
14.	L. Ronel Singh	M.Com.	Accounts Assistant
15.	L. Boyai Singh	VIII Passed	Driver
16.	L. Open Singh	X Passed	Peon
17.	S. Deven Singh	X Passed	Peon
18.	Jamkhanmuan	VIII Passed	Peon (Dak Runner)
19.	Mrs. Chingthanching	VIII Passed	Chowkidar
20.	Kh. Leidou Maring	VIII Passed	Sweeper

Project Staff :

21.	L. Surjit Singh	M.Sc. PGDCA	J.R.F. (PIC)
22	L. Nilkumar Singh	B.Sc. (Fishery)	Fishery Officer
23	S. Sanjay Singh	XII -Sc.	Attendant cum watchman
24	H. Sanjay Singh	X	Attendant cum watchman
25	T. Siampu	VIII	Attendant cum watchman

2.0 Short-term Activities including Science Popularisation

The Manipur Science and Technology Council (MASTEC) organised various centrally sponsored programmes/ workshops/trainings relevant to the state including science popularisation to fulfil the objectives for establishment of the Council. The following were the programmes implemented by MASTEC during the year 2014- 2015.

2.1 Observation of World Intellectual Property Day

The World Intellectual Property Day 2014 was observed on 26th April 2014 under the theme “**Movies – A Global Passion**”. It was organised by Patent Information Centre (PIC) and Intellectual Property Facilitating Centre (IPFC) of Manipur Science & Technology Council, Imphal in association with Department of Pharmacology, JNIMS, Imphal. The main objective of the workshop was to create awareness about IPR among the intellectuals, entrepreneurs, individuals etc. Th. Surendranath Singh, Director MASTEC, Imphal, delivered lecture as a resource person. About 100 participants comprising of medical students, faculty members and interested individuals attended the programme



Resource person delivering lecture on World IP day

2.2 Science Meet 2014

Manipur Science & Technology Council in association with Science Teachers' Forum Manipur (STFM), Manipur Association for the Promotion of Science (MAPS), Manipur Science Communicators' Association (MASCA) and Generation De New Image (GENIM) organised a 5-day long state level Science Meet 2014 as a continuing activity of Observation of National Science Day 2014 and Observation of National Technology Day 2014, during May 11-15, 2014 at Manipur Science Aquarium complex, Imphal. The programme was catalysed and supported by National Council for Science & Technology Communication (NCSTC), Department of Science & Technology, Government of India, New Delhi.

Activities of Science Meet 2014

The main activities of Science Meet 2014 included Science model exhibition cum competitions, Science short play competition, Science Quiz, Spot Painting, Declamation Contest, Best Appreciation Award and Best Guide Teacher Award selection, Book

exhibition, Science Film shows, Explaining science behind miracles, Science Drama and Puppet Plays etc.

Science Model Competition & Exhibition

The competition was organised for students reading in Class VIII – XII. A single student or a team of two students from the same school were allowed to participate and display an Exhibit Model. Altogether fifty eight models were exhibited by 111 students from various schools of the State. Rohen Phanjoubam and Kh. Risharani of Paradise English School, Thoubal Okram got the first position on their model “Underground and Roof Tanks Water Level Indicator”. Velolie Koijam and Nishika Ningombam of Mega Manipur School got the second position on their model “Concept of Mathematical Park”. Undana Leimapokpam and Okram Romita Devi of Ananda Purana School, Thoubal got the third position on their model “New Paddy Thresher”. Soubam Shyam Sunder and Roshan Langpoklakpam of Ananda Purana School, Thoubal and Sanatombi Aheibam and Sarita Wakambam of Mega Manipur School were placed in the 4th positions on their models New Tareng and Power Failure Indicator respectively for consolation prizes.



Students displaying Science Models during Science Meet 2014

The Best Guide Teacher Award for the Science Model Competition, in recognition of the guidance of the teachers towards his students in developing and designing the science model for the competition, was awarded to S. Tomba Singh, Paradise English School, Thoubal Okram.

Science Quiz Competition

The competition was organised for students reading in Class IX-XII Science. Thirty one teams from 25 schools registered for the competition. Each team comprised of two students from the same school. Out of 31 teams, three teams were selected for the final round through a preliminary round - Written Contest. In the final round quiz, Mr Lisham Keirungba Singh & Joshi Chand Chongtham of Pioneer Academy, Palace Compound got the first position. Khundrakpam Robinson Singh & Moirangthem Ashokumar Meitei of New Public Hr. Sec. School, Khangabok was placed in the second position. Yohenba Lourembam & N. Manglemba Singh of J.N.V. Umathel, Thoubal got the third position.



Science Quiz Competition

Spot Painting Competition

The spot painting competition was organized in 3(three) groups viz., i) Sub-Junior Group (Class III—V), ii) Junior Group (Class VI-VIII) and iii) Senior Group (Class IX-X). Altogether 36 students from 30 schools in sub junior category, 41 students from 35 schools in junior and 37 students from 32 schools in the senior category participated in the competition respectively.

In the Sub-Junior group, Laiphrakpam Rohit of Don Bosco Hr. Sec. School, Chingmeirong got the first position. Miss Wangkheimayum Tangjakhombi of Mega Manipur school, Yarlapat was given the second position. Thoudam Reshmi Devi of Mega Manipur

school, Yaralpat got the third position. Moirangthem Bronson of Secred Heart Hr. Sec. School, Imphal and Kh. Rajkumar Singh of St. Joseph's School, Sangaiprou were selected for consolation prizes.

In the Junior Group, Shougaijam Santosh Singh of Grace Cottage Academy, Kakching and Malemnganba Waikhom of Shishu Nistha Niketan, Imphal were given the first and second positions respectively. Keisham Yohenbi of Mega Manipur School, Yaralpat got the third position. Sorokhaibam Radison of Mother's Pride Academy and Milli Rajkumari of Mega Manipur School, Yaralpat were placed for consolation prizes.

In the Senior Group, Anand Naoroibam of Enlighten Knowledge and Y. Rahul Singh of Wangkhei High School got the first and second positions respectively. Ashem Indrajit Singh of Little Master English School, Samurou got the third position. Ksh. Gopinath Singh of Kanan Devi Memorial School and Soom Soom Malemnganbi of Shishu Nistha Niketan, Imphal were selected for consolation prizes.



Students participating Spot Painting Competition of Science Meet 2014

Declamation Contest

The competition was opened to students reading in Class IX-XII Science. Out of thirty seven students from various institutions, thirteen contestants were selected for the contest through a written test. The students gave an oral presentation for 7 minutes either in English or Manipuri with Slide/Power Point Presentation on any of the given topics and then interacted with the judges. The topics for the contest were (i) Fostering Scientific Temper, (ii) Science To-day and Tomorrow, (iii) Creating the Future through Science.

Salam Jibashil Singh of Mother's Pride Academy, Bishnupur was the winner of the competition. Yohenba H. of Maria Montessori Sr. Sec. School, Koirengei got the second position. Thoudam Naresh of Mother's Pride Academy, Bishnupur and Ishorchand Chongtham of Temple of Learning, Canchipur got the third position respectively.



A student giving presentation during the Declamation Contest

Science Short Play Competition:

The Science Short Play competition was open to the students upto Science Degree standard. A team of at least 5 (five) and at the most 10 (ten) students from the same school was allowed to compete for the competition. The teams were supposed to play a Short Play on any theme of Science. Altogether 3 (three) teams took part in the competition. The students' team of Brighter Academy Khumbong comprising of six students namely Niranjana Chanam, Tarunjit Elangbam, Malasana Thongbam, Loyangamba Angom, Dinku Aheibam and Roger Laishram was the first winner of the competition.



Science Short Play Competition

The students' team of C.T. Hr. Sec. School, Mayang, Imphal comprising of five students namely Heisnam James, Md. Suleiman Khullakpam, Md. Sahid, Nelson Amom and Y. Roshibina Devi got the second position. The students' team comprising of Laishram Sandhyarani Devi, Th. Rohit, Ksh. Rahul, Rohitkumar, Undana Leimapokpam, S. Bony Singh, L. Sonali, Sharamila and A. Shushma from Ananda Purna Academy, Thoubal got the third position.

Book Exhibition

Scientific Book Exhibition was one of the activities of the Science Meet 2014. A number of students, teachers and parents visited the book stalls and also bought many books of their interests. In Science Meet 2014 only 1 (one) Book Stall i.e. M/s Job Centre, Babupara, Imphal participated in the Book Exhibition. However the lone Book Stall displayed maximum books of various streams including those of Competitive Exams.

Scientific Film Shows

Science films were shown for one hour duration on all 5 days of Science Meet-2014. These scientific films were the collections of MASTEC and Vigyan Prashar, New Delhi. A few scientific films screened during the Meet included i) A brief History of Time, ii) Black Hole, iii) Time Travel, iv) The Theory of Everything, v) Hubble Amazing Universe etc.

Explaining Science Behind Miracles

Scientifically Explaining Miracle was one of the most popular scientific shows of the Meet. Miracles or magic are aged-old human activities, which make people wonder or confuse and sometimes mislead the general public. The expert members of GENIM demonstrated some items behind miracles and the scientific backgrounds of the shows were also explained on the 4th day of the meet. During the 5-day programme of the Science Meet 2014, Science Behind Miracles was kept for 3 (three) days of 2(two) hours duration each day and every day, hundreds of students & general public witnessed the show and could learn how science has been related with miracles.



Science Behind Miracles Show

Puppet Play & Science Drama

The art of puppetry has been very much effective in communicating science to the people. Members of MASCA presented 3 (three) puppet shows based on the focal theme of National Science Day and National Year of Mathematics. The titles of the puppet plays were: 1) Bikram-Betal, 2) Hingminnashi Eikhoi, 3) Pangkhreda. One Science Drama based on Scientific Awareness to Remote Villages was played by the local artists during Science Meet 2014. The title of the Science Drama was **“Anouba Lambi”** meaning **“New Way”** in which the writer tried to highlight the importance of Science in our day to day life and emergence of modern development in Science and Technology.

Best Appreciation Award

The most prestigious award of Science Meet namely Best Appreciation Award was kept on the last day of SM-2014. The award was introduced by MASTEC since the year 1997 given to an individual student who proves to have gained the maximum knowledge of science from the Meet as judged by questionnaire response and personal interview. The Best Appreciation Award for SM-2014 was selected from 110 participants of different standards. The award was given to Niranjan Chanam, Class X of Brighter Academy, Khumbong, Imphal West.



Best Appreciation Award competition in progress

Prize Distribution Function

The 5-day long Science Meet 2014 concluded with a Valedictory and Prize Distribution Function on May 15, 2014. Dr. I.S. Khaidem, Former Vice Chancellor, Manipur University & Former Chairman, Manipur Public Service Commission and Shri Th. Surendranath Singh, Director, Manipur Science & Technology Council, Imphal were the Chief Guest and President of the Valedictory function respectively. Cash prizes with citations and memento were distributed to the prize-winning students of various competitions by the dignitaries on the dais.



Prize distribution to the students

2.3 Dr. Ibeyaima Innovation Award

Manipur Science and Technology Council recently instituted an award in the name of **Dr. Ibeyaima Innovation Award**. The award has been donated by the Manipuri Association of Canada (MAC), based in Whitby, Ontario, Canada in memory of its member Late Dr. Hijam Ibeyaima Devi who was a student of science. The award is intended to enhance the scientific and technological activities in Manipur.

The Award was designed to be given to the Individual (scientist, technologist, entrepreneur or the like) or any organization (academic institutions, R&D organizations, and NGOs) for outstanding contributions towards causing and promoting scientific and technological innovations both in theoretical and practical realms provided the innovation is purely originated from establishments within the state of Manipur. The Award was given to Shri M. Manihar Sharma for his innovative product “ Solar Silk Reeling Cum Spinning Machine ”. The award carries a cash prize of Rs 20,000/- a memento and a citation.



Demonstration on Solar Silk Reeling Cum Spinning Machine and receiving Award from the Chief Guest of the Function

2.4 Contact Programme for Talented Girls School Students of Manipur

The five day long Contact Programme for Talented Girls School Students of Manipur catalysed and supported by NCSTC, Department of Science & Technology, Govt. of India was organized during September 16-20, 2014 at Imphal. Shri Uttam Chand Laisram, Director, DST, Govt. of Manipur inaugurated the programme as the Chief Guest and Dr. Sh. Dorendrajit Singh, Professor of Physics, Manipur University presided over the inaugural function. Altogether 49 girl students including 12 guide teachers from different schools covering five districts in the state attended the residential programme.



Inaugural Function of the Contact programme for talented school students

The activities performed during the five day programme included visits to the laboratories of various scientific institutions/establishments, popular science talk cum demonstration, science elocution, hands on practical, some chemistry experiments, face to face with distinguished scientists.

On the first day, Prof. Dorendrajit delivered a lecture on the topic "Story of Electrons : From Atoms to nano materials". He highlighted in brief about the applications of nano materials in industries and answered the questions put by students. The participants visited the laboratory of National Institute of Electronics and Information Technology (formerly, DOEACC center) and learnt some aspects of Information technology such as communication through e-mail, cybercrimes do's and don'ts, internet browsing etc. All the students created E-mail IDs of their own and communicated among themselves to cross check if their e-mail IDs so created were correct.



Students during the practical class at NIELIT computer laboratory.

The participants visited the Institute of Bioresources & Sustainable Development (IBSD), DBT, Govt. of India, Takyelpat, Imphal West on the second day of the programme. Dr. Shantibala Devi, Scientist, IBSD delivered a lecture in brief on Bioresources with reference to Manipur and also highlighted about the research activities carried out in the institute. Then, they were taken to the laboratories of different divisions of the institute such as Microbial bioresources, Plant bioresources, Natural product chemistry, Bioinformatics, Animal bioresources. The students interacted with the scientists working in the laboratories by asking questions.



Students visit to Microbial lab. of IBSD

The students also visited the electronics, computer, civil engineering labs. of Manipur Institute of Technology (MIT) and met the scientists / engineers. Earlier, Dr. Basanta Singh, Head of Electronics & Communication Engineering department, MIT interacted with the

students on the topic “Engineering sciences and role of engineers in the society”. The visit to MIT was followed by visit to Manipur Science Center and they enjoyed with the scientific equipments available in the center.

In the evening, Shri Ganga Ningombam, Secretary, Yoga Research and Training Centre (YRTC), Imphal delivered a lecture on Yoga for health. Miss. Thoithoi Devi, a member of YRTC demonstrated some Yoga Asanas which could be performed by ladies and also highlighted the usefulness of the Ashanas to health. Later, the same evening, the students and guide teachers joined the practice of Yoga under the guidance of the Yoga teacher.

On the 3rd day, the participants visited the laboratory of Anatomy and Physiology of Jawaharlal Nehru Institute of Medical Sciences (JNIMS), Imphal. Earlier, Prof. Deven Laishram, JNIMS delivered a lecture on “Effects of Sleep Deprivation on Health” and answered the questions asked by the students. Dr. Chandramani Singh, Head of Anatomy Department, JNIMS explained to the students about human anatomy while the students visited the Anatomy laboratory. On the same day, the students visited the Tissue Culture lab., Soil Sciences lab., Plant pathology, Mushroom research lab. of Central Agricultural University (CAU), Imphal and interacted with the agricultural scientists.

Dr. A. Herojit Singh of soil sciences department, CAU highlighted to the participants about soil fertility. He, together with the students, performed some experiments on soil testing in his laboratory. Dr. R.K. Tombisana Devi briefed to the students about the



Practical on mango grafting & rose budding



A Lady Professor of CAU briefing about mushroom propagation at her farm

techniques of propagation of mushroom plants in her mushroom farm. In the evening of the same day, Dr. R.K. Dilip Singh, Associate Professor, Horticultural Department, CAU conducted a hands on practical along with the student participants on i) Rose budding & ii) Mango grafting. The practical session continued from 7 p.m. to 10 p.m. as evening programme of the day.

On the 4th day of the programme, the participants visited the seismic observatory of the Earth Sciences Department, Manipur University. Dr. Manichandra S. Seismologist explained about earthquakes using power point presentation and how the waves were measured in the seismic observatory unit. He showed the world's plate tectonic boundaries and explained about plate movements which lead to the cause of earthquakes.

Dr. H. B. Sharma, Associate Professor of Physics Department, Manipur University interacted with students on “Physics and its contributions to the society”. He mentioned elaborately why physics occupied an important place among the basic sciences in the development of a nation. Dr. B. Sharma and



A physics researcher explaining about the uses of electron microscope

Manoranjan Singh of the Department took the students to the laboratories including Electron microscope lab., XRD lab. and explained the uses of the devices available in the department for research purpose. The students also visited Chemistry department of Manipur University in the afternoon. Dr. R.K.Bhubon Singh, of the department delivered a lecture on the topic “Chemistry in our life” and interacted with the students. He conducted some chemistry experiments in the form of science behind miracles and explained how they were done. Later, he had interactions with the students by giving answers to the questions put by the students.

A science elocution was arranged on 20th September, 2014 during which students representing a school made presentations on a science topic which was already given to them well in advance. Some students used power point presentation and some students used charts for making presentation. Three experts from different disciplines attended the session and evaluated their performances.

Jina Devi Saikhom, Brojeshwori Devi Leimapokpam and Soram Thaja Chanu of ST. George High School, Imphal East made oral presentation on the topic - Organic Farming.



Presentation on science topics by students during science elocution competition

Lhingneihat Singson, Leveine and J.Reveine of H. M. Higher Secondary School, Keithelmanbi, Senapati dist. Spoke on the topic - Human Digestive System. Kh. Rishita Devi, K. Jubita Chanu and Helena Lourembam of Wangkhei High School, Imphal made presentation on the topic – Vitamins. Samjetsabam Monica, Sylvia Khoirom and Karishma Sapam of Regular English High School, Imphal spoke on the topic - Cosmetics & its Harmful Effects. Sivani Chanambam, Sophia Longjam and Potsangbam Rojita Devi of C.T. Higher Secondary School, Mayang Imphal presented on the topic - Water Pollution. Bhumika Heisum, Sh. Nandeshwori and Th. Priya Chanu of Th. Ibobi Memorial English School, Uchiwa made presentation on the topic - Women Scientist (Kalpana Chawla). Jasma Th., R.K.Sanathoi and R.K.Sanathoi of Keishamthong High School, Imphal spoke on the topic – Solar Energy. Miss Lhouvum, Chongneilhing Kipgen and Vahhoilhing Lhouvum made presentation of Apex Christian High School, Motbung, Sadar Hills presented on the topic - World Environment Day. Ahanthem Chanu Dhanashree, Pukhram Bidyarani Devi and Wahengbam Melody Devi of Moirang Multipurpose Higher Secondary School made



presentation on the topic - Diabetes Mellitus. Ayekpam Priyalaxmi Devi, Ayekpam Nandita Devi and Salam Jogita Chanu of Paree Imom Sindam

A section of the student participants during the science elocution session

Sang High School, Langjing presented on Water Pollution. L. Deviya Devi, Th.Sarju Devi and T. Ashabala Devi of New Public Hr. Sec.School, Khangabok also made presentation on the topic - Water Pollution. Narmata Chinglembi Konsam, Tineshwori Devi Akoijam and Diana Kh. of Pitambara English School made presentation on the topic - Diabetes Mellitus. On the recommendations by the Jury Members, the team consisting of Miss Narmata Chinglembi Konsam, Tineshwori Devi Akoijam, Diana Kh. of Pitambara English School, Imphal was placed in first position. Kh. Rishita Devi, K. Jubita Chanu and, Helena Lourembam of Wangkhei High School, Imphal East district got the second position. Miss Ayekpam Priyalaxmi Devi, Ayekpam Nandita Devi and Salam Jogita Chanu of Paree Imom Sindam Sang High School, Langjing, Imphal West and Jina Devi Saikhom, Brojeshwori Devi Leimapokpam and Soram Thaja Chanu of St. George High School, Imphal East were jointly got the third position.

A face to face with distinguished scientists was arranged during which students were given opportunity to ask questions and experts answered. Altogether seven number of scientists of different disciplines namely i) G. Tomba Sharma (Chemistry), Retired Principal, D.M. College of Science, Imphal, National Awardee in science popularization (print media), ii) Prof. Sh. Dorendrajit Singh (Physics) of Manipur University, iii) Dr. Ksh. Pabitra Singh (Veterinary & Animal Husbandry), Former Joint Director, State Veterinary Department, Manipur, iv) Prof. L. Nabachandra Singh of Central Agricultural University, v) Dr. H. Nandiram Sharma, (Botany), Former Head, Botany Department, D.M.C. of Science, vi) Dr. Kh. Shamungou Singh (Zoology), Former Head, Zoology Department, D.M.C. of Science, Imphal and vi) Prof. Deben Laishram (Medical Science) of Jawaharlal Nehru Institute of Medical Sciences, Imphal were the experts for the session for interaction with the students.

The 5 day residential programme concluded on 20th September 2014 with a function during which the participation certificates were distributed to the student participants and guide teachers by the dignitaries on the Dias.



Scientists of different subjects at the Dias for face to face interaction session



A girl asking question to the experts

2.5 Contact Programme for Talented Boys School Students of Manipur

The five day long second Contact Programme for Talented School Students of Manipur (boys) catalysed and supported by NCSTC, Department of Science & Technology Govt. of India was organized during October 27-31, 2014 at Imphal. Shri G. Tomba Sharma, Former Head, Chemistry department and Principal, D.M. College of Science, Govt. of Manipur and also a National Awardee in popularization of science through print media inaugurated the programme as the Chief Guest. Dr. N. Rajmuhon Singh, Professor of



Inaugural Function – Chief Guest delivering inaugural address

Chemistry, Manipur University attended the function as the Guest of Honour and Shri Th. Surendranath Singh, Director, MASTEC presided over the function. Altogether 48 boys including 12 guide teachers from 12 different schools covering five districts in the state attended the programme.

While giving inaugural address, G. Tomba Sharma mentioned that talent alone could not make students success in life. Students need to study with hard work and self-confidence. He advised the students to focus on what, how and why in every steps of study of science. He said that the visit to various research institutions and meeting the scientists working in the laboratories would stimulate the young minds and would attract them towards science. In his presidential remarks, Th. Surendranath Singh mentioned about some of the programmes on popularization and communication of science being implemented by the Council as annual feature. He highlighted that visits to the laboratories of various scientific and academic institutions, popular science talk, science elocution, hands on practical, some chemistry experiments, face to face with distinguished scientists etc. would be the major activities of the five day programme he said.

On the first day of the programme, Prof. N. Rajmuhon Singh delivered a lecture on the topic “Inspiring Youths through text books” and interacted with the students. In the



Resource person delivering a lecture and interacting with the students



A section of the participants attending a popular science lecture

afternoon, the participants visited the laboratory of National Institute of Electronics and Information Technology (formerly, DOEACC center) and learnt some aspects of Information technology such as communication through e-mail, internet browsing etc. All the students created E-mail IDs of their own and communicated among themselves to cross check if their e-mail IDs so created were correct. Earlier, Shri Baboo Singh, Scientist, NIELIT delivered a lecture on the topic “Cybercrimes” and interacted with the students. In the evening, Dr. R.K. Bhubon Singh, Professor of Chemistry delivered a science talk on the topic “Importance of Chemistry in life” and interacted with the students.



Lecture cum discussion on Solar system held in the classroom of MI Technology

Next day, the participants visited Manipur Institute of Technology, Imphal where faculty members led by Dr. Suresh Singh and Er. Ranbir Singh made presentations on Engineering sciences and solar system respectively and interacted with the participants. They interacted on the characteristics of the Planets including Pluto. Then, the students were taken to Electronics & Communication Engineering (ECE), Computer science lab. where they met the scientists working in the labs.

The students visited the Institute of Bioresources & Sustainable Development, DBT, Govt. of India, Takyelpat, Imphal. Dr. Shantibala Devi, Scientist-C of the institute welcomed them and highlighted about the Institute. Then, she and her team took the students in two groups to the laboratories of the different divisions such as Microbial bioresources, Plant biorecources (medicinal & aromatic), Natural product chemistry, Bioinformatics, Animal bio-resources (insect & aquatic) of the institute where research scholars, scientists were working and explained about the researches being carried out in each division in the institute. In addition, the students also interacted with the scientists working in the laboratories. In the evening, the students practiced Yoga under the guidance of the Yoga teacher Ganga Ningombam with whom they discussed in length about the benefits of Yoga to health. Reading the whole day will not be meaningful if he or she forgets the lessons quickly. This happened to the students when their health condition is not good, the Yoga teacher said. He performed some Asanas (Yoga positions) and explained the benefits of the Asanas to keep the body/health strong, disease free and increase memory power.



A scientist explaining about the research being carried out at the laboratory of IBSD

The participants visited the laboratory of the NEIST, CSIR, Lamphelpat, Imphal. Dr.



Experiment on extraction of oil from aromatic plants performed at NEIST-CSIR laboratory



Interaction on Mathematics with a Professor of Mathematics

Birkumar Huidrom, Principal Scientist interacted with them on the Prospects of Medicinal Plants available in Manipur and then, he took them to the laboratories of the institute. He, together with the students, performed experiments on Extraction of oil from aromatic plants using the facility available at his laboratory. The students also visited the medicinal plants grown inside the Institute campus. In the afternoon, the students visited Central Agricultural University (CAU), Imphal. Dr. M. Kunjaraj Singh, Associate Professor, Agriculture Extension Unit, CAU made a short lecture on the topic "Agriculture in our life" and interacted with the students. He guided the students while visiting different laboratories such as Plant breeding (Tissue culture), Entomology, Soil Sciences etc..

On the same day evening, Dr. H. Jayentakumar Singh, Former Head, Mathematics Department, D.M.C. of Science, Imphal – a renowned writer of mathematics delivered a lecture on the topic "Mathematics & its applications in the study of other branches of sciences". He further interacted with the students how to study mathematics. He advised the students to think of seriously i) What to do? ii) How to do? iii) Why to do? for solving problems of mathematics, He said that mathematics is the father of science and without it,

science could not be studied at higher level. He also explained in brief to the students about the difference between mathematics and natural sciences.

The participants paid visits to the Physics, Seismological Unit and Chemistry Laboratory of Manipur University (MU), Imphal on the 4th day of the programme. Prof. N. Nimai Singh of Physics Department, MU delivered a lecture on Physics & its contributions in society. He suggested to the students to go ahead in any subject of the basic sciences after 10 + 2 standard. He highlighted about the career opportunities for further study at some of the national institutions of repute such as IISER, NISER through KVPY, INSPIRE scheme of DST, Govt. of India. He further advised the students to avail of the students' fellowship programmes of Govt. of India with which students could proceed further study without financial constraints. Later, he took the students to the Physics laboratory and explained to them about the facilities including Electron microscope available there with which students could carry out research in their area of interest in physics.



Students visiting the Physics laboratory at Manipur University

In the Earth Sciences Department of Manipur University, Dr. Manichandra Sanoujam, Seismologist explained to the participants how the earthquakes occurred and how seismic waves have been recorded at the seismological observatory. He further mentioned and interacted with the students about the movements of plate tectonics along plate margins and its relationships with the occurrence of earthquake, Dos & Don'ts to be followed before an earthquake, during and after an earthquake for awareness of the students. He showed the seismic waves which was recorded recently at the observatory.



Interaction on earth quakes /seismology

In the Chemistry Department of MU, some chemistry experiments were demonstrated by a team of researchers led by Dr. Bhubon, Professor of Chemistry in the form of explaining science behind miracles and interacted with the students. He told that magicians while performing activities took the help of science but did not disclose to the public how he did. Later, he took the students to his laboratory and gave them opportunity to meet and interact with the researchers in the chemistry department. In the evening, Dr M. Mahendra Singh, JNIMS delivered a lecture on the topic Medical Sciences in the 21st Century and interacted with the students. In his lecture, he covered in brief the medical practice done from ancient time and its developments to the 21st century. Dr. Mahendra advised the students to keep their body sound and healthy with regular exercise. He told the students to



Demonstration of some chemistry experiments conducted at Manipur University

digest the concept of medical care for life and live comfortably and longer without health problems.

The students had science elocution on the last day during which a team of students representing a school made presentation on a science topic of their choice. Four expert members evaluated their performances and also provided inputs for improvements. Mr Daneil Leishangthem, Thangjam Bikash Singh and Md. Washimkhan made presentation on the topic “World ozone day”. M. Malemnganba and Namoiyam Borish spoke on the topic Global warming. Lalgilun Lhouvum, Hemanta Khatiwada and Singson made presentation on the topic “Respiratory System”, Md. Arif Khan, Yumnam Rahul and Kh. Gallant spoke on the topic – Diabetes. Akoijam Daniel, Thokchom Promesh and Langpoklakpam Sunny made presentation on “Organic farming”. Suresh Oinam, Haobijam Peter Khuman and Lourembam Suresh presented on the topic “World Ozone day”. Y. Kenedy Singh, Y. Seibasajee Singh and Th. Debajit Singh spoke on the topic – Vitamins. Kelvin Salam, Keisam Sachin Meitei and Ningthoujam Rukin made presentation on “Cosmetics & its effects on skin”. Kishan Gupta, Manggoulen Kipgen and N. Rajen Singh presented on the topic – Our Earth. Khoirom Laingam Singh, S. Amarjit Singh and Y. Sailesh presented on the topic – Global warming. M. Ashokumar Singh, Kh. Robinson and Kh. Sanathoi Singh presented on Global warming. M. Jonson Meitei, A Jidan Singh and L. Netrajit Singh made their presentation on the topic “A great mathematician of India - S. Ramanujan”.



Students making presentation on science topics during science elocution contest

In the afternoon, a face to face session was arranged. All the students and guide teacher participants were given opportunity to ask questions of their interest (any subject) to the resource persons and learn answers from the resource persons. Resource persons included



A student asking question during the face to face interaction session



Subject experts at the Dias for the face to face interaction with students

Prof. M. Mahendra Singh, ii) G. Tomba Sharma, iii) Dr. H. Nandiram Sharma, iv) Dr. Kh. Shamungou Singh, v) Dr. H. Jayentakumar Singh and v) M. Govinda Singh. Shri Th. Surendranath Singh, Director, MASTEC moderated the session. Altogether about 45 questions covering Physics, Chemistry, Botany, Zoology, Mathematics and Medical sciences were asked by the students and the experts answered and also interacted with the participants.

The five day Contact programme for talented boys concluded on October 31, 2014 with a certificate distribution function. All the subject experts who were present during the face to face also attended the function as the guests of honour.

2.6 Millennium Science Lecture

The Millennium Science Lecture was organised on December 10, 2014 at Model Higher Secondary School, Govt. of Manipur, Imphal, in honour of the Nobel laureates of the year 2014 in Physics, Chemistry and Physiology (Medicine). Three invited resource persons namely Prof. Sh. Dorendojit Singh, Manipur University, Ch. Rajendro Singh, Imphal College and Dr. O. Joychandra Singh, JNIMS, Imphal spoke on the achievements of the Nobel laureates (Physics, Chemistry & Physiology) of the year 2015.

2.7 Celebration of National Mathematics Day 2014

The National Mathematics Day 2014 was celebrated on December 22, 2014 at S.D.J.M. Higher Secondary School, Ghari, Imphal West. It was organised in association with the S.D.J.M. School. About 150 participants consisting of students, teachers from various schools in Manipur attended the programme.

The main feature of the programme was invited lectures by Resource Persons. Shri Th. Surendranath Singh, Director, Manipur Science & Technology Council, Imphal,



A section of participants during Celebration of National Science Day



Resource Person delivering lecture in the Celebration of National Science Day

Shri H. Jayantakumar Singh, Retd. Head, Department of Mathematics, D.M. College of Science, Imphal and Shri L. Inaoba Singh, Administrator, S.D.J.M. Higher Secondary School, Imphal were the Chief Guest, Guest of Honour and President respectively of the celebration.

A lecture on the topic “Mathematics in Our Day to Day Life” was delivered by Shri H. Jayantakumar Singh, Retd. Head, Dept. of Mathematics, D.M. College of Science, Imphal. The lecture was followed by interaction with the participants.

2.8 Regional Training Workshop on Science Journalism/Writing For North Eastern States

The five day long Training Workshop on Science Writing/Journalism for North Eastern States was organized in the Conference Hall of Anthropology Department, Manipur University, Imphal during February 10-14, 2015. The objective was to impart training to the participants about science writing for print & electronic media.

Prof. H.N.K.Sarma, Vice Chancellor, Manipur University inaugurated the training as the Chief Guest. Shri Kh. Raghumani Singh, IAS, Additional Secretary (Sc. & Tech.), Govt. of Manipur presided over the inaugural function. Dr. Manojkumar Patairiya, Additional Director General (ADG), Prasar Bharati, Ministry of Broadcasting, Govt. of India attended the function as the Honoured Guest. The programme was catalysed and supported by NCSTC, Department of Science & Technology, Govt. of India. Altogether, thirty two participants including fifteen ladies (science teachers from different colleges, schools,

Universities, science NGOs, research scholars etc. from the North Eastern States) successfully attended the training workshop.

In his address as the Guest of Honour, Dr. Manoj Kumar Patairiya said that it was a kind of regional programme that brought science writers/scientists of different disciplines together for the common cause of science communication in the north eastern region. He mentioned that scientists working in the laboratories for the development of society sometimes found it difficult to bring out his innovative ideas as well as new technologies for the knowledge of common people. Science communicators could pass on the ideas of the scientists to the common people through media (print or electronic), he further said. He further said that a person who possess scientific background of any branch of science, is eligible to write for the benefit of the public or target group. But he has to have the skill of translating the scientific information into common people's language which of course should be interesting, meaningful, easy to understand and the presentation should be such that the readers or target group enjoys with it.



Dr. Manojkumar Patairiya, former Scientist G/Advisor, NCSTC, DST, GoI, giving speech as Guest of Honour

In his Inaugural speech, Prof. H.N.K Sarma mentioned about the importance as well as need for science popularisation/communication among the masses. He said that the workshop would create an opportunity for the participants to learn in depth from the esteemed resource persons on the techniques of writing science. He appealed to the delegates to contribute scientific ideas/articles in his or her subjects in any form of available media which in turn will enhance the knowledge of the common people.



The Vice Chancellor, Manipur University addressing as the Chief Guest of the inaugural function

In his presidential address, Shri Raghmani Singh said that Science writers have a very challenging and highly responsible role in preparing the society for a living in Scientific World. He further said that MASTEC had been taking a lead role in popularization of science in the state by implementing a number of activities supported by different agencies.

The activities of the programme included lectures delivered by invited resource persons and interaction with the participants, practical activity on script development for print, electronic media, presentation of scripts developed by participants and evaluation process by experts. Dr. D.C. Goswami, Former Advisor, NEIST, CSIR, Jorhat, Assam, Dr. C.M. Nautiyal, Scientist, Birbal Sahni Institute of Paleobotany (BSIP).



A section of the participants of the Training workshop

Lucknow; Dr. Manojkumar Patairiya, Additional Director General (ADG), Prasar Bharati, Shri Ak. Khogendro Singh, Programme Head, DDK, Imphal Station, Shri Dhiren A Sadokpam, Editor –in- Chief, Huieyen Lanpao Daily (English Edition), Imphal, Shri G. Tomba Sharma, Former Principal, DMC of Science, Imphal were the resource persons to impart training to the participants.

Dr. Manojkumar Patairiya delivered a popular science talk on the topic “Science Communication and Efforts of Govt. of India” and interacted with the participants. In his lecture, he highlighted about the general concept of science communication and efforts of DST, Govt. of India. The technical session was chaired by Prof. M. Mahendra Singh, J.N. Institute of Medical Sciences, Imphal who also acted as Vice Chairman, Manipur Science Communicators’ Association, Imphal.

In the Technical Session of the first day, Dr. D.C. Goswami delivered a lecture on the topic “Science Writing (Techniques)”. Dr. C.M. Nautiyal also delivered a lecture on “Identification of topics for popular science writing and source of information. It was followed by his second lecture on the topic “Writing for Radio Programmes” and interacted with the participants. The session was chaired by Dr. Manoj K Patairiya and Prof. M. Mahendra Singh. There held a discussion session on “Format for Writing” during which the resource persons and technical chair persons had face to face interaction with the participants about the formats for writing.



Dr. C.M. Nautiyal interacting with the participants



Dr. D.C. Goswami, former Advisor, NEIST, Jorhat delivering lecture on techniques of writing

On the second day i.e. 11th February, Dr. DC. Goswami delivered a lecture on “Role of science writers & media for enhancement of Science coverage” and interacted with the participants. Ak. Khogendro Singh, Programme Head, DDK, Imphal discussed in brief on Science writing for audio visual media (TV). The session was chaired by Prof. Arunkumar, Secretary, Scientific activities, Indian Science Congress Association (ISCA). Dr. Nautiyal delivered an interactive lecture on “Dealing with Science and approaching Scientist”. After the lecture, a session was arranged during which the technical chairperson told the delegates that since the programme is a training workshop, each participant has to develop scripts, submit it and also make presentation. After presentation, evaluation of the articles for improvement would be made by panel of experts. It would be the output of the workshop he said. All the participants were given opportunity to say one by one on which topic they were going to write and make presentation before the panel of experts.

On the third day, Shri G. Tomba Sharma -a National Awardee of NCSTC, DST, Govt. of India in 2013 in recognition of his contributions in popularisation of science through print media, shared his experiences with the participants about writing in the news paper. He elaborated how he started writing and from where he collected information/data for popular writing. Among others, about fifty clippings of the science articles written by him and published in local News papers in regional language (Manipuri) were shown to the participants which could tell them how many words in average were required for publication in a news paper. He asked the participants to start writing in any topic of science or social importance if he thinks that it would be of great value to the readers.

Later, in the afternoon, the participants and organisers led by the Director, MASTEC, as part of visiting Media organisation, visited Doordarshan Kendra (DDK), Imphal. Shri Ak. Khogendro Singh, Programme Head, DDK took them to different rooms including studio/recording room, transmission rooms etc. and explained about the activities being telecast at the DDK Center. He further explained how a script is converted into image in reality (audio-visual) using the facilities available there. He further interacted about the science programmes which could be taken into consideration for telecast at his center for the benefit of the public

During the course of the workshop, the participants prepared and presented scripts on the 4th day of the training on different themes/topics for various forms of media such as print and electronic media etc. The panel of experts included Dr. C.M.Nautiyal, Scientist, BSIP, Lucknow; Dr. Manojkumar Patariya, Prasar Bharati, Shri Dhiren A Sadokpam, Editor –in- Chief, Huieyen Lanpao Daily (English Edition), Imphal,



Paper presentation by participants & evaluation by experts in progress

In the valedictory function held on the 5th day of the programme with Shri Th. Surendranath Singh, Director, Manipur Science & Technology Council in the chair as the Chief Guest, the certificates were distributed to the delegates. Shri Dinesh Sadokpam, Editor in Chief while giving his comments about the programmes, assured that he would encourage the writers by way of publishing all the articles which has been rated good by the panel of experts one by one in the science & technology page of his esteemed Daily

2.9 Celebration of National Science Day 2015

The Council organised “Celebration of National Science Day 2015” on February 28, 2015 at National Institute of Electronics and Information Technology (NIELIT), Akampat, Imphal. The theme for National Science Day 2015 was **“Science for Nation Building”**.

Shri Kh. Raghumani Singh, IAS, Additional Secretary (S&T), Govt of Manipur, Shri Th. Prameshwor Singh, Director, National Institute of Electronics and Information Technology (NIELIT), Akampat, Imphal and Shri Th. Surendranath Singh, Director, Manipur Science & Technology Council, Imphal were the Chief Guest, Guest of Honour and President respectively of the celebration. The main feature of the programme was invited lectures by Resource Persons. About 200 participants consisting of students, teachers from various schools and general public in Manipur attended the programme.

A lecture on the topic **“Life and Works of C.V. Raman”** was delivered by Shri R.K. Birjit Singh, Science Activist, Centre for Conservation and Cultivation of Science and Nature (CCCSN), Ningthoukhong. He explained in depth about life history of Prof. C.V. Raman right from his childhood (school days) to his discovery of Raman Effect. He concluded that our young students must also work hard to contribute something to the society and to become a Nobel Laureate in the future and bring fame for the Nation.



Resource Person giving Lecture in the Celebration of National Science Day

Prof. S. Dorendrajit Singh of Physics

Department, Manipur University, Imphal also delivered a lecture on the focal theme of National Science Day 2015 “Science for Nation Building”. He explained the contributions of Indian Scientists viz., Prof. C.V. Raman, Homi Jahangir Bhava, Srinivasa Ramanujan, Dr. A.P.J. Abdul Kalam etc. and said that for development of our Nation we also should try to contribute something in the development of Science Technology in the country.

2.10 State Science Communicator Award

The State Science Communicator Award 2015 has been instituted by Manipur Science & Technology Council, Imphal for the first time in Manipur this year to be given to the individuals who have made significant contributions in the past five years in the field of science communication/popularization in the state. The Award was conferred to Shri Th. Uthan Singh of Ngairangbam Makha Leikai, Imphal west District. The award carries Rs 10,000/- cash, citation and memento



*State Science Communicator Award
2015 distribution function*

2.11 Resource Persons Training Workshop on Micro-organism: Let us observe and learn.

Manipur Science and Technology Council (MASTEC), Imphal in association with Department of Botany, Imphal College, Imphal had organized “Resource Persons training Workshop on Micro-organism: Let us observe and learn” during March 25 – 27, 2015 at the Department of Botany, Imphal College under the catalysation and support of National Council for Science and Technology Communication (NCSTC), Department of Science and Technology, Government of India, New Delhi. The training workshop was inaugurated by Shri Kh. Raghumani Singh (IAS), Special Secretary, Science & Technology, Government of Manipur as the Chief Guest, Shri Th. Surendranath Singh, Director, Manipur Science and Technology Council, Imphal as the Guest of honour and Shri Ramesh Chandra Haomom, Principal, Imphal College presided over the inaugural function.



Inaugural session of Workshop on Micro-organism

In his inaugural address, Shri Kh. Raghumani Singh mentioning about the important roles of the teachers appealed to all the participants to take full advantage by acquiring adequate knowledge from the Resource persons. Shri Th. Surendranath Singh after highlighting some of the important activities of MASTEC requested to all the participants to take up further activities in their schools to benefit the students by demonstrating experiments. Shri Ramesh Chandra Haomom while expressing his happiness for hosting the training workshop



*Practical on observing bacteria using
microscope in progress*

urged the participants to interact with the resource persons during the course of the training workshop in order to make the workshop a successful one.

The main objective of the training workshop was to train resource persons for propagating the knowledge gathered from this workshop to the school children particularly to those students who are reading in class VII – X standard. The training workshop was conducted under a specific module of NCSTC, DST, GOI. The module comprises of a microscope, tools and materials, a CD-Rom, an activity manual and posters and all these are meant for carrying out a number of exciting open ended experiments. The experiments have been designed to give an idea that micro-organisms are around us and they can be isolated from soil, water, food, cloth, hair, coins, decomposable materials etc.

Participants were drawn from different schools of the state by putting a notice to wide publicity and selection of the participants were made on first come first served basis. Altogether, 30 school science teachers participated in the training workshop. Two Key resource persons namely Prof. R. N. Bhattacharyya, Former Head, Department of Botany Department of Botany, Cotton College, Guwahati and Shri L. Somarjit Singh, Associate Prof., Department of botany, Imphal College, Imphal imparted in-depth training to the participants. During the course the training module (Kit, manual, posters CD-Rom) was demonstrated. Different techniques on the use and handling of certain equipments, washing and handling of glasswares, sterilization of glasswares, preparation of media etc. were demonstrated to the participants. Using the kits, a number of experiments were performed by the participants.



Presentation of micro-organism kits to the participants

The training workshop concluded on March 27, 2015 with a closing function. During the function, a micro-organism kit which contains a microscope, tools & materials, a CD-Rom, an activity manual and posters was presented to each participant for further demonstration in their students. The kit was meant for carrying out a number of exciting experiments on micro-organisms. The training workshop was closed with concluding remarks from Director, MASTEC.

3.0 Projects

3.1 Community Pond based Safe drinking Water System (BARC UF technology)

The Community ponds are major sources of water in the villages. The water of these ponds are not safe to drink without treatment. The S&T intervention was necessary to improve the quality of water. Keeping this view, 3(three) rural villages were identified to implement community pond based safe drinking water system using BARC developed ultrafiltration membrane technology.

The objectives of the project included i) conserving Community Pond, ii) supplying safe drinking water using BARC ultrafiltration technology and popularising as well as transfer of technology in future. The project was sponsored by Water Technology Initiative (WTI), Division, DST, GOI. Under the project, three Safe Drinking Water Systems with the capacity of 2000 lpd for each system have been installed at three villages namely i) Khabam



Safe Drinking Water System at Konthoujam tribal village

Bamdiar, Imphal West ii) Thoubal Athokpam in Thoubal district and iii) Konthoujam Maning(West) Tribal Village and the systems become functional.

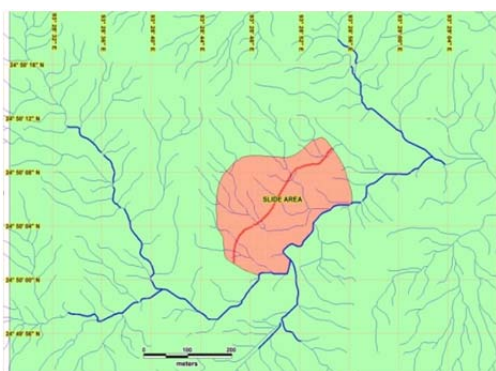
3.2 Geological and Geotechnical Investigation of one site located between Noney-Nungba along NH-37 and suggest remedial measures

The project was sponsored by NRDMS Division, DST, GOI for a period of 2(two) years with the following objectives

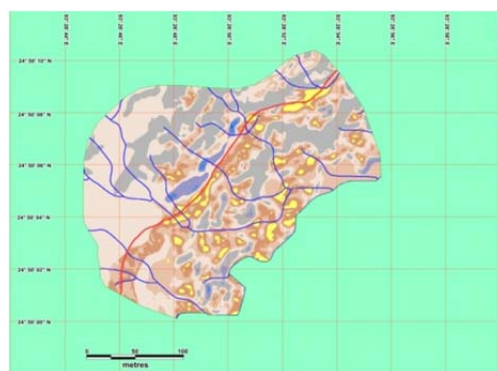
- To study geomorphology, geology and structural parameters for slope stability and generate detailed maps on 1:500 scale
- To study soil and rock mechanical properties and their influences on slope stability
- To recommend remedial/preventive measures

Achievement :

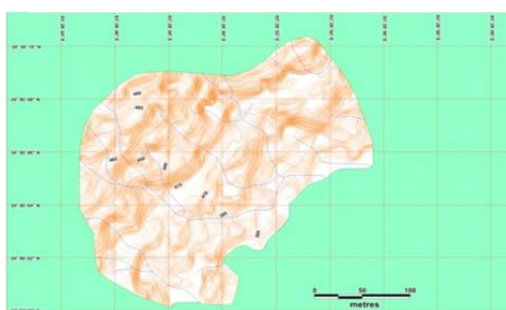
The preparation of thematic maps such as Drainage Map, Slope Map, Slope Aspect and Contour Map of the study area has been done for further study.



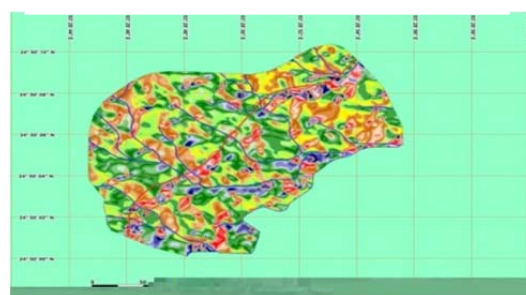
Drainage Map



Slope Map



Slope Aspect



Contour Map

3.3 MASTEC – ICAR joint venture project on Pisciculture and its allied activities for socio-economic development in Manipur

Achievement :

Fish brooders of Indian major carps – *Catla catla*, *Labeo rohita*, *Cirrhinus mrigala*, and other exotic carps such as Grass carp (*Ctenopharyngodon idella*), Silver carp (*Hypophthalmichthys molitrix*), Common carp (*Cyprinus carpio*) were procured for production of spawn. Breeding of the above fishes were carried out during the month of June 2014 adopting Induced breeding technique using Wova FH at the rate of 0.5 ml per body weight. Breeding was



Hormone injection for breeding

successful and the fry were reared in the nursery pond till they attain fingerling size.

Under the project, 11 demonstration farms for food fish and 4 for ornamental fish had been selected after inspection of the farms sites by the project team. Out of the 11 food fish farms, eight farms belonged to the valley districts and three were in hill districts. To impart basic knowledge about scientific farming of food and ornamental fish, a two day training programme on Pisciculture was organized during June 19-20, 2014 at Manipur Science Aquarium, Imphal. Altogether 30 participants including all the 11 beneficiaries for food fish and 4 beneficiaries for ornamental fish attended the training programme. 5 local Resource persons gave indepth training to the participants. During the two days course field activities such as breeding of fish through injection were also demonstrated.



Training programme on Pisciculture

Ponds renovation such as strengthening of the embankment, fixing of siphoning pipes, eradication of weeds, insects and weed fishes was taken up in the selected farms. Insects were eradicated by soap oil emulsion method and weed fishes by frequent netting. Liming of the ponds at the rate of 300 kg per hectare and manuring using raw cow dung at the rate of 1500 kg per hectare was done.

Fish fingerlings of mixed varieties of Catla, Rohu, Mrigal, Grass carp and Common carp were distributed to the selected 11 food fish farmers in two phases and reared in their farms. Critical inputs such as water pump set with all accessories, lime, and feed were distributed to all the selected farms.



Distribution of critical inputs to beneficiaries

Water quality of the ponds, growth rate of the fish, diseases etc. is monitored periodically. Four farmers/entrepreneurs had been selected for taking up activities on ornamental fish. Critical inputs such as Aquarium tank, gravel, power filter, bed filter and double output aerator, thermostat, thermometer, aerator pipe, valves, nets, siphoning pipes, feed, medicines such as anti-bacteria, anti-fungal, anti-itch and anti-chlorine etc. were distributed to the four beneficiaries.

Some local ornamental fishes from various places of the state were collected and reared in aquarium tank. The fishes are from various reservoirs such as lakes, ponds, rivers, canals etc. Breeding of fan tail Gold fish (*Arassius auratus*) was tried with the available facilities at Manipur Science Aquarium. Breeding was tried at glass aquarium tank of size 3' (l) x 1' (b) x 1.8' (h). The breeding was successful with 50% survival rate.

3.4 Patent Information Centre

The Patent Information Centre was set up with the guidelines and financial support of DST, Govt. of India to achieve the following objectives

- To create awareness about IPRs, especially patents, in the state of Manipur and neighbouring region of this centre and enable patent searches for the universities, industry, government departments and R&D institutions in the State and around.
- To analyze the patent information on a regular basis and suggest new programmes for R&D based on such information.
- Guide the inventors in respect of patenting their inventions.

Activities : Patent Application & Searches:

A new method of separation and isolation of Indirubin from KUM (*Strobilanthes flaccidifolious nees.*) leaves was published in the Patent Journal of India on 12/12/2014 with Patent Application No. 0695/KOL/2013A

The following searches have been made

- ECO-Keisham Steel Metal & Iron Works
- Cympobogon Citratus Tea
- Apparatus for extracting natural products
- Roof top rain water harvesting tank

Ten NGOs from different places in the state visited PIC unit for IPR query of their product items such as Kouna products, Pottery, Doll Making, Bamboo & Dry Flower, Silk Cloths, Carving & Furniture, Water Filter etc.

3.5 Intellectual Property Facilitating Centre (IPFC)

The Intellectual Property Facilitating Centre (IPFC) for MSMEs, Manipur was set up under the support of Ministry of Micro, Small and Medium Enterprises (MSMEs), Govt. of India, New Delhi with the objectives of determining IPR needs of selected clusters of MSME in the state and extend legal, financial and technical support to them for protecting intellectual property of the industries such as patents, trademarks, design, copyrights etc.

Progress :

Nungbi Pottery – Black Pottery of Manipur has been documented for GI registration

Seminar :

The Intellectual Property Facilitating Centre (IPFC), Patent Information Centre (PIC) and Manipur Science & Technology Council, Imphal observed World Intellectual Property Day on 26th April 2014 under the theme “**Movies – A Global Passion**” during which invited resource persons delivered lectures on IPR issues and interacted with the participants. About 100 participants comprising of medical students and faculty members attended the programme.

3.6 MASTEC – CAU (Central Agricultural University) joint venture project on Generation of Pony Based Animal Energy for utilisation in agricultural development of Manipur State.

The project was to be implemented jointly with the Animal Sciences Department, Central Agricultural University, Imphal to achieve the objectives such as

- To utilise Manipuri Pony in income generating activities so that the activity declining population of the breed can be checked.
- To find out standard local carrying capacity and development standard work/rest protocol of Manipuri Pony in relation to distance or time covered during transportation by taking up research work on pony physiology & relevant biochemical parameters
- To construct pony cart, packing device in consideration to Manipuri Pony's load carrying capacity and other conveniences
- To make training programmes on scientific Pony management & utilisation of Manipuri Pony in transportation of agricultural commodities.

The project has been supported by DST, Govt of India and the implementation has just started.

3.7 Manipur Science Aquarium

The Council took up a project 'Manipur Science Aquarium' which was being sponsored by Department of Science & Technology, Govt. of Manipur. The project aimed at studying the behaviours of different types of local and marine fishes and conserving the fish fauna of the state. It also aimed at making awareness of the available local fishes and creating a place for recreation of the public. A variety of fishes both ornamental and local fish are reared in the aquarium tanks. The aquarium centre receives a number of visitors (students, teachers, general public etc.) daily.



Visitors to the Science Aquarium

Fish Collection/Contribution

The officials of the centre visited a number of rivers and ponds in different places in the state such as - Imphal River, Litan River, Iril River, Ithai River, Ningthem Pukhri, Thangmeiband Pukhri, Thanga, Moirang etc. for collection of local indigenous fishes.

Scientific Name	Local Name
• <i>Biota dario</i>	Sareng Khoibi
• <i>Barilus bola</i>	Ngawa
• <i>Chanda nama</i>	Ngamhai
• <i>Aplocheilus lineatus</i>	Lanmeithanbi
• <i>Colisa fasciata</i>	Ngapemma
• <i>Notopterus notopterus</i>	Kandala
• <i>Hypostomus plecostomus</i>	Crocodile Fish
• <i>Ompok bimaculatus</i>	Ngaten
• <i>Channa punctatus</i>	Ngamu
• <i>Glossogobius giuris</i>	Nylon Ngamu
• <i>Gara lamta</i>	Ngamu sengum
• <i>Osteobrama cotio cotio</i>	Ngasheksha

Breeding

Breeding of fan tail Gold fish (*Arassius auratus*) was tried with the available facilities at Manipur Science Aquarium at glass aquarium tank. One set of 2 males and 1 female was

injected synthetic hormone Wova FH. After 18 hours of injection, eggs were released. Hatching started on the 6th day and around 500 eggs hatched out on the next day. On the 9th day, feeding started with egg yolk and then with Artemia from 40th days. Survival rate of the fry was 50%.

Visitors

Other than the individual daily visitors, students from different schools, family members in groups etc. visited the centre.

Exhibition

The 2nd state level Aquarium Exhibition-cum- Flower Show was organized during April 10 – 20, 2014 in the Aquarium complex at Imphal. It was organised in association with Fish World, Keisampat Keisam Leikai, Sharma Aquarium, Keisampat Junction., Aqua Delight, Chingmeirong Khongnangani Karak, Phurailatpam Surjakanta Sharma, Uripok Yambem Leikai, Cinderella Plant's Care, Chingamakhong Singjamei Chinga Keithel, King City Evergreen Nursery, Pisumthong Bazar, Lei-Yum, Nagamapal Paonam Leikai and Gaminash Nursery, Bamon Leikai Brahmapur Nahabam Imphal East. Altogether 94 species (34-Indigeneous; 60-exotic) in 75 tanks and 136 flower/plant species were displayed. During the exhibition on an average 500 visitors per day including students and children visited the center.

3.8 Tricycle Rickshaw Operated Paddy Thresher:

The project was taken up to fulfill the following objectives.

- To develop and fabricate a tricycle attached paddy thresher for socio-economic development.
- To introduce and demonstrate the thresher to the farmers in and outside the state.

Achievements:

Under this project, altogether 12 (twelve) Tricycle Paddy Threshers have been fabricated and field trials have been carried out at different sites/locations in the last paddy harvesting season i.e. during November-December, 2013.

New Observations:

From the field trials carried out for threshing mustard oil seed it has been observed that the Tricycle Thresher can thresh the mustard oil seed effectively with encouraging output. Thus the Tricycle Paddy Thresher can be used not only to thresh paddy but also to thresh other similar crops.

The Thresher is operated manually just like driving a Tricycle Rickshaw. It does not require electricity or any other fuel operation. It can also be used to thresh moist crop and keeps the whole straw unspoiled after threshing instead of cutting/chopping by the heavy duty diesel operated Paddy Threshers.



Trial of Harvesting of paddy using paddy thresher in progress

Patents filed

One Patent application No. 1128/KOL/2013 entitled Tricycle Threshing Machine has been filed and published in the Indian Patent Journal (Patent office, Kolkata).

4.0 Meetings/Trainings attended by Officers

Name of official with designation	Meetings/ Trainings	Sponsoring agency	Venue	Period
Th. Surendranath Singh	8 th PAC Meeting of WTI, DST, Govt. of India held	DST, Govt. of India	Vishakhapatnam	April 25, 2014
	Review Meeting of Core Support and Progress of State Councils	DST, Govt. of India	Gujarat Council for S&T, Ahmedabad	September 15- 16, 2014
Dr. L. Dinachandra Singh	Review Meeting of Core Support and Progress of State Councils	DST, Govt. of India	Gujarat Council for S&T, Ahmedabad	September 15- 16, 2014
	Meeting of the Expert Committee on Landslide Hazard Mitigation	DST, Govt. of India	IIT Mumbai	December 30-31, 2014
Kh. Rakesh	Discussion on Micro-organism Kits	DST, Govt. of India	Cotton College, Guwahati	December 19 – 21, 2014
Ch. Sarat Singh	8 th PAC Meeting of WTI, DST, Govt. of India held	DST, Govt. of India	Vishakhapatnam	April 25, 2014
	Meeting of DST Core Group on State S&T Programme (SSTP)	DST, Govt. of India	Bhopal	October 31 -November , 2014
	DST, Govt. of India Meeting on creation of the “Centre for Skill Development on Renewable Energy in NE- Region”	DST, Govt. of India	Guwahati	

5.0 Visiting Scientists to MASTEC

The following scientists visited the office of MASTEC in connection with the programmes shown below.

Sl. No	Name of official with designation	Designation with Organisation	Meetings/ programme attended	Date of visit
1	Dr. D.C.Goswami,	Former Advisor, NEIST, CSIR, Jorhay	Resource person for the Regional training Workshop on Science Writing / Journalism for N-E Region	Feb. 10-14, 2015
2	Dr. C.M.Nautiyal	Scientist, Birbal Sahni Institute of Paleobotany, Lucknow	Resource person for the Regional training Workshop on Science Writing / Journalism for N-E Region	Feb. 10-14, 2015
3	Dr. Manoj K Patairiya	Addl. Director General, Prasar Bharati, New Delhi	Resource person for the Regional training Workshop on Science Writing / Journalism for N-E Region	Feb. 10-14, 2015
4	Dr. Mangi Khuman	Asst. Professor in Geology, Nagaland University, Kohima	Attending Regional training Workshop on Science Writing / Journalism for N-E Region	Feb. 10-14, 2015
5	Dr. Mohondas	Asst. Professor in Chemistry, Mizoram University.	Attending Regional training Workshop on Science Writing / Journalism for N-E Region	Feb. 10-14, 2015
6	Suman Thapa	Scientific Officer, Sikkim State Council of Science & Technology, Gangtok	Attending Regional training Workshop on Science Writing / Journalism for N-E Region	Feb 10-14, 2015

7	Anjuna Mutum	Researcher, Assam University, Silchar	Attending Regional training Workshop on Science Writing / Journalism for N-E Region	Feb 10-14, 2015
8	Er. Amitab K.	Asst. Professor, North Eastern Hill University, Shillong	Attending Regional training Workshop on Science Writing / Journalism for N-E Region	Feb 10-14, 2015
9	Ksh Chitrabhanu	Researcher, Assam University, Silchar	Attending Regional training Workshop on Science Writing / Journalism for N-E Region	Feb 10-14, 2015
10	Prof. R. N. Bhattacharyya,	Former Head, Department of Botany, Cotton College, Guwahati	Resource person for the Training Workshop on Micro Organism	March 25-27, 2015

6.0 Library

The Council has made a modest attempt to build up its own library. There is a collection of about six hundred volumes of various disciplines. In addition, a number of periodical journals, bulletins, local papers, science publications etc. are received regularly. MASTEC aims at strengthening the library of the Council.