

Agenda item 3,

“General exchange of views”

Reports on space education and awareness activities:

Submission by members of Space Education and Awareness Working Group

The attached document compiles submissions received by 16 November 2008 from members of the Space Education and Awareness Working Group containing reports on the highlights of formal and informal education relating to space activities in the past year, future plans for educational initiatives relating to space activities and any proposals for initiatives to be undertaken by the Working Group in 2008.

The members from the following countries submitted the reports: Malaysia, Pakistan and Sri Lanka.

Report from Malaysia

1. Highlights of formal and informal education relating to space activities

National Space Challenge Competition

National Space Challenge Prime Minister's Trophy is a program that was created in an effort to instill talent and desire as early as possible in students especially those in the primary school toward the understanding of space. This program has entered its 10th year. It was first introduced in the year 1997 as primary school level of Space Science Quiz Prime Minister's Trophy. The National Space Challenge proved to be a revolution in the science programs in Malaysia, and it would set a new milestone for any future science program. The qualifying test involving all primary schools in whole Malaysia was conducted in April 2007, and the selected 160 schools were called in for the state competition. The semi-final and final were conducted in November 2007.

National Water Rocket Competition

This is a collaborative program among the National Space Agency, School Division, Ministry of Education Malaysia and University of Malaya. The competition is opened to all secondary schools, under Ministry of Education Malaysia, and was conducted in all states in Malaysia involving about 28 ,000 schools. 30 school finalists competed in the final last September 2007.

Microgravity Science Education Experiments Programme (C. elegans)

This is an interactive education programme via internet and the only one in Malaysia where students have to do their research and observation on C. elegans in ISS by measuring the length and count C. elegans in the downloaded picture in Orions Quest website. Students have to make analysis and prepare reports on their findings. A total of 500 students from 17 schools from 4 states participated in the programme.

Students Parabolic Flight Experiment Programme

This educational program, in association with the International Space Station (ISS) project aims to provide the undergraduate students from a diverse range of research fields, including science and engineering fields, with an opportunity to participate in conducting microgravity experiments. Japan through the Japan Aerospace Exploration Agency (JAXA) is a

contributing partner. This program aims to promote a greater awareness for the utilization of the space environment and to develop human resources for future space related development activities through the National Space Agency (ANGKASA), Malaysia. The best three candidates and proposals from Multi Media University, Universiti Teknologi Malaysia and National University of Malaysia have been chosen but only one experiment will be selected for flight. The program started in August 2007, and the report on the experiments is expected to be submitted in April 2008.

Microgravity Science Education Programme

This program utilizes the first Malaysian astronaut to perform science demonstration on Twisting Orbital Platform (TOP) and Liquid Behaviour Experiment on the ISS for the students. The objectives are to enhance knowledge of and interest in space science and technology and to further stimulate interest in lesson and teaching by adding new teaching resources and information. National Space Agency collaborates with the Ministry of Education and National University of Malaysia to develop a lesson plan. 20 teachers and 330 students were involved in the video live telecast session on the 19th October 2007. The program was also telecast live in three major television stations in Malaysia.

2. Future plans for educational initiatives relating to space activities

Ministry of Science Technology and Innovation will be conducting major road shows on exhibits, talks and educational activities related to Malaysian Angkasawan (Astronaut) Programme in the whole country in the year 2008.

Report from Pakistan

1. Highlights of formal and informal education relating to space activities

Pakistan Space & Upper Atmosphere Research Commission (SUPARCO) is committed to increasing awareness of the benefits of space technology and its applications of the youth, the decision makers and the general public. In this regard, various activities are being carried out. These include holding exhibitions to create awareness, printing information brochures, giving lectures at university level and mass awareness campaigns through the print media.

Lately, SUPARCO has started targeting the younger generation specially school students and is actively involved in creating awareness of space applications. Many activities are held in this regard especially for World Space Week (WSW) celebrations.

Institute of Space Technology

SUPARCO helped establish the Institute of Space Technology in Islamabad. This institute offers four year BS programmes in Aerospace Engineering and Communications Systems Engineering. It is affiliated with Beihang University of Aeronautics & Astronautics (BUAA) in China and Surrey University in the United Kingdom for split MS Programmes, and it is a degree awarding institute.

Space Education Booklet

In 2006 and 2007, SUPARCO published a space education booklet for school students. These booklets were distributed in various private and public schools in Karachi and Islamabad as well as distributed to underprivileged students in the rural areas of the Sindh province. The booklets provided some basic information about astronomy, space sciences, space technology and its applications. The booklet was printed in English and Urdu. The space education booklet is also available on the SUPARCO website.

Space Education Bus

SUPARCO has designed a special Mobile Education Unit (bus). A team of scientists from SUPARCO were sent with this bus to the rural areas of Sindh Province during World Space Week celebrations in 2006 and 2007. The bus is equipped with state of the art multimedia equipment and various other instructional facilities. The team of scientists gives lectures to school students in their regional language and show them space-related documentaries translated in Urdu.

Introducing Space related topics in the School Curriculum

SUPARCO coordinated with the Education Ministry and has influenced the National Science Curriculum for secondary schools by including topics related to space sciences technology and its various applications in daily life. This curriculum will, hopefully, come in effect through development of new text books and teachers training manual in the next few years, increasing this awareness campaign to the entire country.

Introductory course in Space Sciences & Applications

In the first quarter of 2007, a basic level introductory course was held for Bsc level students. Twenty students attended this course.

Collaborative Projects with Universities

SUPARCO undertakes collaborative research projects with universities in the country.

World Space Week Activities

As Pakistan's National Space Agency, SUPARCO has been organising WSW activities in Pakistan for the past three years. Every year, the support of students, sponsors and coverage given by the media is on the increase.

Panel Discussion

During WSW 2007 SUPARCO held a Panel Discussion where experts in the field gave information about Pakistan's activities in the realm of space sciences and technology. The experts also answered questions raised by the students, teachers and parents.

WSW Competitions

Quiz, declamation, On-spot Poster Making, Model Making and dramatics competitions were organised for school students. These competitions engaged the students for the entire week.

Water rocket demonstration

Water rocket demonstrations were held at the Space Family Fair organised by SUPARCO to stimulate excitement among students and the general public. There are plans to hold water rocket competitions in 2008.

Space Family Fair

A space family fair was held in connection with WSW 2007 celebrations in Pakistan. Information brochures about SUPARCO's activities and achievements were given to the general public and students. SUPARCO also organised stalls giving information about different applications of space technologies. Highlights of the event were the space related

documentaries in Urdu, vehicle tracking display and Telemedicine Unit. These created a lot of interest in the general public and increased awareness of space applications.

Creating Mass Awareness

For creating mass awareness of the benefits of space activities, SUPARCO ensures that WSW events get coverage in print and electronic media. Spokespersons from SUPARCO give information about space activities, interviews and discussion programmes.

2. Future plans for educational initiatives relating to space activities

National Center for Remote Sensing & GIS

A National Center for Remote Sensing & GIS has been established at Karachi. The center will be operational by the beginning of the year 2008. This center will initially offer Certificate and Diploma level courses in Remote Sensing & GIS and later will be upgraded to offer MS and PhDs in these fields.

Training of teachers for the new science curriculum

SUPARCO is coordinating with the Education Ministry for training teachers to teach the newly introduced space technology related topics in the curriculum.

Apart from this, arrangements have been made to train science teachers through a Karachi based NGO of science teachers. A summer course will also be offered to train science teachers at the National Center for Remote Sensing & GIS during the summer vacations at school.

Report from Sri Lanka

1. Highlights of formal and informal education relating to space activities

The Arthur C. Clarke Institute continued the Space Science Promotional and Popularization Program for years 2006 and 2007. Under this program, the following events were organized:

- i) Night sky observation camps for school children and teachers;
- ii) Residential Workshop on Introduction to Practical Astronomy and Space Science;
- iii) Educational exhibitions;
- iv) Educational programs to promote the International Heliophysical Year (IHY).

As for “CanSat” development, the Institute used the GPS module purchased from “Furuno Co.” in Japan and developed a system to obtain the GPS coordinates and controlling algorithms for the parachute.

2. Future plans for educational initiatives relating to space activities

Since the country’s only telescope facility is located in the heavily light polluted area near the capital city, a new astronomical telescope facility is being planned for installation in a remote area with a view to enhancing the observing quality and to popularizing and promoting astronomy in the rural community.

The Institute intends to participate in a CanSat competition that could be organized by APRSAF in the future. The Institute has planned to organize a local CanSat competition among undergraduate schools in local universities.

3. Proposals for initiatives to be undertaken by the Working Group in 2008

The Working Group could identify ways to collect exhibits for the proposed Arthur C. Clarke Exploratorium, which was accepted by the Working Group during APRSAF-13.