Astronomy Education Awareness in Malaysia

By:

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(Paper presented at the ***10th Asian-Pacific Regional Meeting of the International Astronomical Union held on 3-6 August 2008 in Kunming, China)***

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Abstract:
Astronomy education in Malaysia had evolved since the 1700's. However, it involved the teaching of determining qibla direction, praying times, crescent observation and some astrology. In the early 1980's awareness of Malaysian Government of the important of space science education had created the Space studies Division (BAKSA) in the Prime Minister Department and Malaysian remote sensing center (MACRES) under Ministry of Science, Technology and Environment (MOSTE). In the 2003, BAKSA had been changed to the National Space Agency (NSA). NSA and Ministry of Education (MOE) had been promoting awareness in space science education mainly in astronomy. They organized national quiz competitions for primary and secondary schools, astronomy projects, rocket launching technology and others. The Malaysian Government had embarked on the astronaut program where the first Malaysian astronaut onboard the International Space Station (ISS) Dr. Sheikh Muszaphar Shukor on 12th. October 2007. The successful of this astronaut program had created public awareness of space science especially in astronomy. Malaysia had hosted the International school young astronomer 2007. We will be hosting the COSPAR workshop in June 2008.The higher Institutions in Malaysia are beginning to pursue the curriculum of astronomy teaching and getting involved with the heliophysical year 2007 and the International year of Astronomy 2009. This paper will be highlighting the effort done in Malaysia to encourage astronomy

education from MOE, NSA, Malaysian government and the Higher Institutions in Malaysia.

Introduction

Space science missions have revealed the Universe through new eyes, opened up new worlds, and continued exploration for better understanding. They have given us fundamental new information about the origin and evolution of stars, planets, galaxies and the universe itself. Furthermore, it has shown us that black holes really exist. They have opened up the tantalizing prospect of searching for life beyond Earth in programme such as search of extraterestrial intelligent (SETI). Space science has demonstrated potential for strengthening interest in science and improving the quality of science, mathematics and technology education in most countries involving in space exploration. Malaysia has initiated to educate the public of space science by establishing Space Science Studies Division (BAKSA) in 1992 and Malaysia for Center for Remote Sensing (MACRES). These two agencies have been responsible for promoting and cultivating interest among public in Malaysia about Space science education particularly astronomy and awareness. Ministry of Education in Malaysia also involved in restructuring the schools curriculum and included astronomy education curriculum.

Education Programmes

The formation of National Planetarium under BAKSA was to create awareness among Malaysians towards science and technology in particular astronomy, space science and technology. Educational programmes in National Planetarium such as large Format film shows and exhibition gallery. Films such as "Comets are coming" and "The Power of Water" are shown. In the exhibition hall, they have Entrance Room, Transporter Room, Mars Surrounding, Venus Surrounding, Black Hole, Antigravity Room and Camera Obscura. BAKSA others educational programmes are educational publication, pamphlets and SEMESTA magazine dealing with astronomy. BAKSA jointly organized two space science quizzes where astronomy as the main subject for the Prime Minister's challenge trophies with the School Division, Ministry of Education, both for primary and secondary levels. Essay competition for primary and secondary schools on space science and astronomy.

The astronomy club/activity competition was jointly organized with the School Division, Ministry of Education. It was opened to all government-assisted secondary schools inclusive of state religious schools and the MARA Junior Science Colleges who run their own Astronomy Clubs or Science Clubs registered with the Ministry of Education. Evaluation on the competition was done based on complete reports of school astronomy activities that took place during a year period.

The objectives of the competition were:

- To encourage the formation of astronomy club or society in schools throughout Malaysia
- To inculcate student's interest in astronomy
- To mobilize and activate astronomy activities in schools
- To make astronomy activities more creative and innovative.

In the year, 2003 BAKSA has been upgraded to National Space Agency (NSA) or abbreviated as Angkasa. Many astronomical programs have been planned and conducted at primary and secondary schools children. Programs such as astronomical talks, stargazing, quiz and astronomy projects, competition at national level. For the general public astronomical talks were held at the National Planetarium and eclipses observation were conducted. Seminars and conferences for astronomy and remote sensing were also conducted in Malaysia to encourage teachers, researchers and individual to participate and exchange theirs views.

In the year 2003, National Space Agency (NSA) had introduced a pilot project for Rocket technology launching competition for the Secondary schools in Malaysia. This competition had attracted more than 45 secondary schools in the Klang valley. This year the competition has attracted more than 300 secondary schools in Malaysia.

The objectives of this competition are

- To instill interest, enhance understanding, skills and community knowledge in the field of science and space technology

- To instill culture in students a creative and innovative mindset
- To provide a base which will help in enhancing their understanding for application of theory and concept that have been learned with a technical activity
- To make the field of science and space challenging yet fun for them.

This is a good indication that space science and astronomy education awareness in secondary schools is very encouraging. One of the objectives of this competition is the application of laws of Physics in launching of rockets and parachuting techniques.

The rocket launching technology competition since 2005 had become a competition for Asia Pacific countries. Japan was the first to host the competition in 2005, Indonesia 2006, India 2007 and Singapore will be hosting for 2008.

MACRES has responded to educate the public by hosting talks, seminars, conferences, workshops, courses and open house concept. They do distribute pamphlets and reading materials to the public.

Ministry of Education has introduced space science particularly astronomy curriculum at primary and secondary schools levels but not at universities. Astronomy curriculums in university solely rely on the university staffs individual effort and support from the management. There are many Aerospace Engineering faculties have been established in various universities in Malaysia. Unfortunately, there is no proper Astronomy and Astrophysics department has been formed in universities. If astronomy and astrophysics subjects is introduced it will be under Department of Physics of the university concerned.

Outreach programmes

BAKSA outreach programmes were devised to entertain educational request of communities from outside of the Klang's Valley area. Most of the outreach programmes are exhibitions and talks about astronomy and career. For the public night, observation has been conducted. The public managed to get hands-on experiences on astronomy observation during these sessions. Night observation activities based on astronomical phenomena occurrence such as Mars in opposition, and elongation of Venus, partial and total lunar eclipse, Perseids meteor showers, Jupiter observation and others. Apart from exhibitions and talks workshops on basic astronomy course for teaching trainees teachers and astronomy course for teachers have been conducted. BAKSA also organized several internal courses for knowledge enrichment of the staffs at the National Planetarium.

MACRES also organized workshops on remote sensing and communications.

Strategic programmes

The first Malaysia microsatellite TiungSAT-1 was completed in 1998 but was finally launched in September 2000 succesfully. The launch project has achieved three major milestones that are ballistic calculation, separation system and delivery of dimension mass model with separation system and two sets of pyro-equipment. The successful story of TiungSAT-1 launching has made all Malaysian proud of the achievement. I hope that this event will trigger interest on

space education, astronomy and awareness by public. At the same time BAKSA, radio satellite station was built in 1998 as a communication research station aimed for amateur satellites using digital and analog methods. The station is operating at its full capacity and is able to send and receive data or messages. The station is also capable to receive images from amateur satellites like NOAA, UO-14 directly. Analog communication with SA-35, UO-14 satellites were also possible. I hope that programmes including training in tracking and satellite communication can be incorporated in the near future. In December 2006, the National Observatory at Langkawi Island and satellite tracking station at Sungai Lang, Morib, begin it operation. The government has established Aeronautics Technology Sdn. Bhd. (ATSB) a subsidiary of NSA to venture in satellite technology. There are several small observatories operating in Malaysia for astronomy awareness purposes. These will encourage more school students to inculcate interest in astronomy.

This followed by the announcement of Government of the astronaut programmed in 2007 and launching of the second satellite named RazakSat schedule by the end of year 2008. We had successfully sent the only Malaysian astronaut Dr Sheikh Muszaphar Shukor on board the International Space Station (ISS) on the 12th. October 2007 and performed several scientific experiments for research as well as educational for school childrens.

Furthermore, with the establishment of National Space Agency (NSA) we are hoping that space science, astronomy education and research will flourish in the near future in Malaysia. NSA collaborating with international Astronomical Union

(IAU) had organized International School for Young Astronomer (ISYA 07) 2007 from 3rd. of March until 24th of March 2007 in Kuala Lumpur and Langkawi island Malaysia. The following year NSA with IAU had organized COSPAR workshop on astronomical archive data from space in the virtual observatory from 1st. June until 14th June 2008 in Kuala Lumpur. We hoped the two workshops will benefit the undergraduate and postgraduate students to pursue career in astronomy. National Space Agency (NSA), Ministry of Education (MOE) and Ministry of Higher Education (MOHE) are actively encouraging and promoting schools, universities, public and private sectors to involve in the International Heliophysical Year 2007 and the International Year of Astronomy 2009 (IYA 09). The respond from various agencies are very encouraging to the abovementioned events.

Conclusion

Space exploration will be very important in the 21st century therefore space education and astronomy awareness must be instilling to the public in Malaysia. Promotion of Astronomy Education activities is an ongoing task. More programmes on remote sensing, satellite communication and astronomy will be conducted in Malaysia. Presently the public is not aware of many Astronomy Education programmed being organized by BAKSA/NSA, MACRES and universities. Joint promotions with media, through RTM, TV3, NTV7 and Astro RIA must be actively done. Universities must play their role in constructing a solid curriculum on Astronomy Education and awareness. An integrated Space

Science and astronomy Education awareness programmed for teachers, students and the public will have to be carefully planned. If all the above activities were carried out, hopefully teachers, students and the public in Malaysia will have adequate knowledge of Space science and astronomy education. Furthermore, broader spectrums of space science and astronomy education content need to be introduced into the primary and secondary schools level as well as in the universities.

Acknowledgement

I am very grateful to University of Malaya for providing the financial support to attend and participate in the Asia Pacific Regional International Astronomical Union meeting (APRIM 08). I am taking this opportunity to thank the organizer especially Yunnan Observatory and Chinese astronomical society (CAS) of China for their assistance and kind hospitality.

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